

Volume 13

Pages 2519 - 2763

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

Before The Honorable James Donato, Judge

IN RE GOOGLE PLAY STORE
ANTITRUST LITIGATION,

)
)
) NO. 21-md-02981-JD
)

THIS DOCUMENT RELATES TO:

EPIC GAMES, INC.,

Plaintiff,

VS.

) NO. 3:20-cv-05671-JD
)
)

GOOGLE, LLC., et al.,

Defendants.

San Francisco, California

Tuesday, November 28, 2023

TRANSCRIPT OF PROCEEDINGS

STENOGRAPHICALLY REPORTED BY:

Kelly Shainline, CSR 13476, RPR, CRR
Official United States Reporter

APPEARANCES:

For Plaintiff:

CRAVATH, SWAINE & MOORE LLP
825 Eighth Avenue
New York, New York 10019

**BY: GARY BORNSTEIN, ATTORNEY AT LAW
YONATAN EVEN, ATTORNEY AT LAW
LAUREN MOSKOWITZ, ATTORNEY AT LAW
MICHAEL ZAKEN, ATTORNEY AT LAW
BRENT BYARS, ATTORNEY AT LAW
ANDREW WIKTOR, ATTORNEY AT LAW**

For Defendants:

MUNGER, TOLLES & OLSON LLP
350 South Grand Avenue - 50th Floor
Los Angeles, California 90071

BY: GLENN POMERANTZ, ATTORNEY AT LAW

MUNGER, TOLLES & OLSON LLP
601 Massachusetts Avenue NW
Suite 500 East
Washington, DC 20001

**BY: JONATHAN KRAVIS, ATTORNEY AT LAW
LAUREN BELL, ATTORNEY AT LAW**

MORGAN, LEWIS & BOCKIUS LLP
One Market - Spear Street Tower
San Francisco, California 94105

**BY: MICHELLE PARK CHIU, ATTORNEY AT LAW
REBECCA L. SCIARRINO, ATTORNEY AT LAW
BRIAN ROCCA, ATTORNEY AT LAW**

MUNGER, TOLLES & OLSON LLP
560 Mission Street - 27th Floor
San Francisco, California 94105

**BY: JUSTIN P. RAPHAEL, ATTORNEY AT LAW
KYLE W. MACH, ATTORNEY AT LAW**

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PROCEEDINGS

Tuesday - November 28, 2023

9:06 a.m.

P R O C E E D I N G S

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(Proceedings were heard in the presence of the jury:)

THE CLERK: Calling Civil 20-5671, Epic Games, Inc. vs. Google LLC, and Multidistrict Litigation 21-2981, In re Google Play Store Antitrust Litigation.

MR. BORNSTEIN: Good morning, Your Honor. Gary Bornstein for Epic Games. I have with me Andrew Wiktor, Lauren Moskowitz, and Yonatan Even.

MR. POMERANTZ: Good morning, Your Honor. Glenn Pomerantz on behalf of Google, and with me Michelle Park Chiu, Lauren Bell, Steve Sparling, Jonathan Kravis, Rebecca Sciarrino, and Kyle Mach.

THE COURT: Okay. Who's next?

MR. BORNSTEIN: Your Honor, I'll defer to Mr. Even on that.

MR. EVEN: Good morning, Your Honor. Epic calls Professor Steve Tadelis.

THE COURT: Okay.

THE CLERK: Please raise your right hand.

STEVE TADELIS,
called as a witness for the Plaintiff, having been duly sworn,
testified as follows:

THE WITNESS: Yes, I do.

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1 **THE CLERK:** Thank you. Please be seated.

2 Please state your full name for the Court and spell your
3 last name.

4 **THE WITNESS:** Yes, my name is Steve Tadelis. That's
5 T-A-D-E-L-I-S.

6 **THE CLERK:** Thank you.

7 **MR. EVEN:** Thank you, Your Honor.

8 **DIRECT EXAMINATION**

9 **BY MR. EVEN:**

10 **Q.** Good morning, Professor Tadelis.

11 **A.** Good morning, Mr. Even.

12 **Q.** I see that we have your slide deck up, so let's start with
13 that.

14 And if you can tell the jury a little bit about your
15 academic background.

16 **A.** Sure. I received a Ph.D. in economics from Harvard in
17 1997, and I am currently a professor of economics, business,
18 and public policy and I hold the Sarin Chair in strategy and
19 leadership at U.C. Berkeley at the Haas School of Business.

20 **Q.** And how long have you been a professor?

21 **A.** Just over 26 years.

22 **Q.** And do you have a particular area of focus within
23 economics?

24 **A.** Yes, I do. For a bit over a decade, my focus in research
25 has been the economics of e-commerce and the economics of the

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1 Internet; and, more broadly, I work in a field called
2 industrial organization, which includes the economics of
3 antitrust.

4 **Q.** And have you held any positions related to e-commerce
5 outside of academia?

6 **A.** Yes, I have.

7 **Q.** Let's go to the next slide, and if you can explain that
8 briefly.

9 **A.** Sure. In 2011, I took a leave of absence from U.C.
10 Berkeley and I was hired by eBay to build and lead a team of
11 research economists and data scientists.

12 In 2013, I returned to Berkeley but continued doing
13 part-time work for eBay as a consultant.

14 In 2016, I started doing some work for Amazon and then
15 took another leave from Berkeley. I spent a year at Amazon as
16 vice president for economics and market design, and returned to
17 Berkeley after a year and did about almost four years of
18 part-time work as an economist fellow and scholar at Amazon.

19 **Q.** Have you ever done any economics work for Google?

20 **A.** Yes. A couple years ago, or a little more, Google
21 retained me as an expert for a patent in Canada.

22 **Q.** And have you ever had any other interactions over the
23 years?

24 **A.** Yes, research interactions. The most recent was a few
25 months ago I was invited by a director of economics at Google

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1 to present some of my recent research on digital advertising.

2 **MR. EVEN:** Your Honor, Epic offers Dr. Tadelis as an
3 expert in economics, industrial organization, and the economics
4 of online commerce.

5 **MR. MACH:** No objection, Your Honor.

6 **THE COURT:** Okay. He's qualified.

7 **BY MR. EVEN:**

8 **Q.** Let's go to the next slide.

9 And if you can explain, please, at a high level what is it
10 that you were asked to do in this case, Professor Tadelis?

11 **A.** Sure. My assignment was to investigate whether Google's
12 conduct with respect to Google Play Billing harms competition
13 and consumers.

14 **Q.** And have you formed any opinions on these questions?

15 **A.** Yes, I have. They can be summarized in three words:
16 Forcing, harming, and reinforcing.

17 **Q.** Now let's go to the next slide and focus on your first
18 opinion.

19 At a high level, can you explain your first opinion about
20 forcing?

21 **A.** Sure. So effectively Google forces developers who wish to
22 distribute their apps through the Google Play Store to use
23 Google Play Billing for their in-app purchases of digital
24 goods. This is often referred to as a coercive tie, a forced
25 tie.

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1 Q. So let's unpack this a little bit.

2 First of all, the jury has heard now a lot about
3 Google Play Billing as a payment solution. At a very high
4 level, what is the function of a payment solution?

5 A. A payment solution is what's required for payments to be
6 executed between a buyer and a seller. Easiest to think,
7 whenever you walk into a Starbucks or a Safeway or a Macy's,
8 you're going to have those terminals. That's part of the
9 system that takes the credentials, encrypts them so that
10 they're secure, sends them over for the processing. The
11 processing includes communication with the bank that supports
12 the card, and then it returns an answer to the merchant was it
13 successful or not. That's a payment solution.

14 Q. So at Starbucks or at a supermarket, who decides which
15 terminals to use to process credit card payments?

16 A. It would be the business, Starbucks or the supermarket.

17 Q. And when we're talking online in an app, setting aside the
18 conduct at issue here for a second, who is it that would decide
19 which payment solution to use within an app?

20 A. The developer who builds the app, if they want to have
21 in-app purchases, would have to integrate a payment solution,
22 and that's the developer's choice.

23 Q. And, again, setting aside the conduct here, what would be
24 Google's involvement in in-app transactions?

25 A. In-app transactions are between the user and the app or

1 developer, so they wouldn't play a role unless they are
2 processing the payments.

3 **Q.** Now, you say in your opinion you talk about digital
4 content. Why are you focusing your opinion on the sale of --
5 in-app sale of digital content as distinct from physical goods?

6 **A.** That's because of the nature of the conduct. Google
7 forces this use of Google Play Billing only for the sale of
8 digital content within the apps.

9 **Q.** To your understanding, is there any functional or
10 technological differences between a payment solution that can
11 handle the sale of digital goods and a payment solution that
12 handles the sale of physical goods?

13 **A.** My understanding is that there's no difference. Just like
14 those terminals at a Starbucks or a car mechanic or a barber,
15 pretty much the transaction itself doesn't matter; it's the
16 payment that matters.

17 **Q.** So let's turn to the forcing part of the opinion.

18 As a first step, what is the source of Google's power to
19 force developers?

20 **A.** The source of Google's power comes from their high-market
21 power in the market for distribution, Google Play, that was
22 covered yesterday by Professor Bernheim.

23 **Q.** And what makes you believe that Google has market power in
24 distribution?

25 **A.** Well, the facts here in the case, Google Play, the

1 distribution, has over 80 percent worldwide market share. If
2 you are a developer, you want to access -- what was it? --
3 close to 3 billion users. Google Play is really the only game
4 in town to get that kind of access.

5 **Q.** And what is the mechanism by which Google exercises this
6 power over developers to force them to integrate Google Play
7 Billing?

8 **A.** It's done through the contract. So Google has their
9 developer distribution agreement, the DDA. A developer who
10 wants to distribute must sign that. Within it, it has
11 references to other Google policies, including billing
12 policies, and in it it states simply that if you're selling
13 in-app digital content, you must use Google Play Billing.

14 **Q.** Finally, you end your opinion by referencing something
15 called a coercive tie. So before we even get to coercive, can
16 you explain at a high level what is a tie?

17 **A.** Sure. A tie would be a situation in which a company would
18 say "I have Product A. If you want to buy it, you also have to
19 buy Product B which I am selling." Product A is the tying
20 product and tying -- and Product B is the tie product.

21 **Q.** So let's go to the next slide.

22 And can you explain how you view the tying issue in this
23 case?

24 **A.** So here the narrative would be "I have distribution,
25 Google Play. If you want to distribute through Google Play the

1 tying product and you want to process in-app digital content
2 for sale, then you must use Google Play Billing the tie
3 product."

4 **Q.** Now, you characterize this tie as coercive. What does it
5 mean for a tie to be coercive?

6 **A.** Well, the nature of the term "coercive," it's a forced
7 tie. Meaning that the people who are subject to it would
8 rather not have the tie and would rather not have to purchase
9 the tied product.

10 **Q.** So let's take a look at the next slide.

11 And if you can explain to us what is it that you're
12 showing us here about tying and coerciveness.

13 **A.** So this is an illustration of a noncoercive tie, and the
14 idea would be, imagine that today you want to buy sneakers.
15 You can buy them from Nike, Adidas, Puma, et cetera. And what
16 if Nike suddenly says, "Well, if you want to buy my sneakers,
17 you also have to buy five pairs of my socks"?

18 The reason this wouldn't be coercive is, if you don't like
19 the Nike socks, that's fine. You can buy sneakers from Adidas
20 or Reebok or Vans.

21 So in this case, it wouldn't be coercive because you have
22 alternatives that you could turn to and then buy the socks that
23 you like.

24 **Q.** And if we go to the next slide, what is it that you're
25 showing us about coerciveness in this slide?

1 **A.** So this would be a different world in which Nike is the
2 only game in town for sneakers so that if anyone wants sneakers
3 and Nike says "You also have to buy five pairs of my socks,"
4 people have no other choice even if they don't want the socks
5 and they would prefer another brand or style of socks.

6 **Q.** So what makes you believe that Google's requirement that
7 developers use Google Play Billing in this case is a coercive
8 tie?

9 **A.** Because the two components of what I just described in
10 this little example are in play here as well. On one hand,
11 Google has the power to force through their market power in
12 distribution; and, second, there's a lot of evidence that this
13 forced behavior is causing developers to use a system that
14 otherwise they would prefer not to use. They would prefer a
15 different payment solution system.

16 **Q.** So let's take a look at some of this evidence.

17 In the next slide you talk about a case study about
18 digital content sellers. What are you showing us here about
19 the preference of developers regarding payment solutions?

20 **A.** Let me describe the nature of the case study. Between
21 2011 and roughly 2020, Google had an exemption for using
22 Google Play Billing as the payment solution product; namely, if
23 you were a developer, an app, that was selling digital content
24 that could be consumed outside of the Android system, they
25 didn't force you to use Google Play Billing.

1 And, indeed, during that time, many developers chose not
2 to use Google Play Billing. Here, we have just six very
3 familiar names of such developers that chose not to use it; and
4 later, once the tie was enforced and Google removed the
5 exemption, they were forced to use Google Play Billing.

6 **Q.** Now, one of the developers you mention here is YouTube.
7 Why is YouTube important to your analysis?

8 **A.** YouTube provides an interesting example that's slightly
9 different from the others. So if we think of Amazon Kindle,
10 Tinder, Hulu, these are all companies that are not part of
11 Google; and, therefore, when they use Google Play Billing, at
12 the time they were going to pay 30 percent fees.

13 YouTube is a Google company. They don't pay YouTube --
14 they don't pay Google. Sorry. They're part of Google, and
15 still they were not willing to use Google Play Billing until
16 the decision was forced upon them.

17 **Q.** And do you have an understanding as to why YouTube did not
18 wish to use Google Play Billing?

19 **A.** Yes, I do. They basically felt that it was not providing
20 a lot of the features they need, not giving them competitive
21 advantage, and not allowing them to innovate.

22 **Q.** Let's take a look at the next slide.

23 And what are you showing us about YouTube in this slide?
24 And this is Exhibit 1391 that's already in evidence.

25 **A.** So here we have an exchange, a Chat exchange, between

1 Susan Wojcicki, who was the CEO of YouTube at the time, and
2 here she's corresponding with Mr. Lockheimer who gave testimony
3 in these hearings, and here's some of the things she said (as
4 read):

5 "It's damaging for our business against our
6 competitors.

7 "We need to know how we can innovate on billing and,
8 importantly, that we'll be stuck with a lot of larger
9 prioritization decisions that might be right for Play
10 Billing and bad for YouTube."

11 And there are a lot more of this nature.

12 **Q.** And what do you understand Ms. Wojcicki to mean when she
13 talks about larger prioritizations that are right for Play
14 Billing but bad for YouTube?

15 **A.** So Google Play Billing is trying to be a, you know, one
16 size fits all. Different developers have different business
17 models, different interactions with their users, that might and
18 often will require different types of features in the solution
19 product. So Google Play Billing is kind of aiming for the
20 masses but not allowing this kind of specialization.

21 **Q.** Let's move to your next opinion.

22 And can you explain at a high level what your next opinion
23 is?

24 **A.** Yes. So a consequence of this forcing behavior is
25 basically that it harms competition in the market for payment

1 solutions for in-app purchases of digital content.

2 **Q.** Let's go to the next slide.

3 And what are you showing us here about the types of harms
4 that you have identified?

5 **A.** So there are basically three types of harms. The first
6 and most immediate one is foreclosure. That basically means
7 that Google's conduct prevents producers, manufacturers,
8 providers of payment solutions to fairly compete in this market
9 that we're discussing.

10 The second is the effect on the fees, the prices. Because
11 there is no healthy competition, then fees and prices are
12 higher than they would be when -- if the tie were removed and
13 competition would be allowed to persist.

14 And last, there would be an impact on innovation and
15 quality. When Google doesn't have to compete with other
16 payment solution providers, they lack the incentive to offer
17 the kind of innovations that are needed. We saw some of the
18 examples mentioned by the YouTube's former CEO.

19 **Q.** So let's begin with foreclosure. How does Google
20 foreclose competitors?

21 **A.** Well, very easily. Through that contractual provision
22 that we discussed earlier. By basically saying "You, a
23 developer, cannot use anyone but me for the sale of in-app
24 digital content." It means that anyone but me is foreclosed
25 from this market.

1 Q. And why do you believe that other payment solution
2 providers would wish to offer their payment solutions to
3 developers in this space?

4 A. It's based on the evidence in the case. So, for example,
5 Google identifies Square, Stripe, PayPal, and others, Addium,
6 and more, as companies that would enter, or they expect them to
7 enter, were the tie to be severed.

8 Furthermore, if you recall, between 2011 and 2020, there
9 were developers who didn't use Google Play Billing. These
10 other companies serviced those developers. Some of them
11 created their own solutions.

12 And I believe there was testimony given in these hearings,
13 both by Epic and by Paddle, that they would be happy to enter
14 this market was -- were entry allowed.

15 Q. So let's talk a little bit about high prices, and you
16 mentioned that that is talking about fees and prices. What do
17 you mean by higher prices?

18 A. In particular, I mean the fees that developers are paying
19 for the payment solutions that are basically in this case
20 imposed on them.

21 Q. Now, from the perspective of the developer, what is it
22 that triggers payment of fees to Google?

23 A. So if I'm a developer and I decide to distribute an app,
24 the distribution is free; and the only time I am going to pay
25 something to Google is when I am selling in-app digital content

1 either a la carte or subscription. So from the developer's
2 perspective, the payment will only happen for the sale of
3 in-app digital content.

4 **Q.** Now, before we dig further into that, there have been --
5 there's been testimony in this case that Google provides many
6 more services beyond payment solutions, and so comparing the
7 fee that Google currently charges for in-app purchases to the
8 fee of other payment solutions is like comparing apples to
9 oranges.

10 Is that what you're doing here?

11 **A.** No, that's not what I'm doing. I'm doing something much
12 simpler. I'm trying to answer the following question: The
13 fact is that right now payment only happens, the fee only is
14 charged when an in-app digital content is sold, and Google is
15 charging fees of 15 and 30 percent.

16 The question I'm answering is: If the tie were severed,
17 could they charge 15 to 30 percent for payment solution? And
18 the answer to that is no.

19 **Q.** Let's take a look at the next slide.

20 You can explain what we see here at a high level that
21 suggests to you that Google could not charge 15 or 30 percent
22 but for the tie.

23 **MR. MACH:** Objection, Your Honor. The inclusion of
24 Paddle on this slide is beyond the scope of his report.

25 **MR. EVEN:** Your Honor, Paddle testified in this trial.

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1 Professor Tadelis read it. It's not any different than any of
2 the others on this slide.

3 **THE COURT:** Okay. You can go on for now. Go ahead.

4 **MR. MACH:** Thank you, Your Honor.

5 **MR. EVEN:** Thank you.

6 **THE WITNESS:** Could you repeat the question, Counsel?

7 **BY MR. EVEN:**

8 **Q.** Can you at a very high level briefly explain why it is
9 that you think Google could not charge 15 or 30 percent but for
10 the tie?

11 **A.** Okay. So let's imagine that I'm a developer. I have an
12 app. I want to sell in-app digital content, and currently the
13 tie is there. Let's imagine that it were removed. It means
14 now that I could do the following shopping: I could say "I
15 could use Google Play Billing. That's going to be 30 percent.
16 Or I could use PayPal. That's going to be about 8.8 percent or
17 Stripe 6.1 percent. What should I choose?"

18 Anyone who is profit maximizing would not choose to pay a
19 30 percent fee when they could pay a 9 or a 6 or even a
20 10 percent fee. So with that kind of competition, Google would
21 not be able to charge these kind of prices.

22 **Q.** So let's talk a little bit about the slide to get a better
23 understanding of it because there's a lot there.

24 So, first of all, the slide speaks to an average in-app
25 purchase price of \$9.30. What do you mean by that?

1 **A.** So the \$9.30 comes from the following calculation: I took
2 from the data provided by Google, I think it was 2016 to 2020,
3 all the transactions of in-app digital content, and I just
4 calculated the average fee of that -- the average price of that
5 transaction.

6 You know, you could buy some features in a dating app for,
7 say, 29.99 or something for a game for a dollar, divide it up
8 by the transactions, that's the \$9.30.

9 **Q.** Now, the jury has heard testimony that on Google Play --
10 with respect to Google Play, the fee is either 30 percent or
11 15 percent regardless of the transaction value. Why is the
12 transaction value meaningful for the analysis you're doing on
13 this slide?

14 **A.** So the other payment solution providers have a different
15 charging business model. They typically will have a fixed fee
16 plus a percent for a transaction. So because there's a fixed
17 fee and a percent, it means that the value of the transaction
18 is going to determine the percent of the fee.

19 Just as a simple example, if we take PayPal, their
20 structure is pretty much 50 cents for a transaction plus 3 and
21 a half percent of the transaction value. So if we have a \$9.30
22 transaction, 50 cents is about 5.3 percent. Add to that
23 3.5 percent, you get 8.8 percent.

24 **Q.** Now, have you examined what this chart would look like for
25 in-app purchases made at prices other than \$9.30?

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1 **A.** Yes, I have done that examination. It appears in my
2 report. And the pattern we see here sustains itself; namely,
3 Google charges fees that are significantly more, several
4 multiples of the competitors or potential competitors.

5 **Q.** All right. So now let's turn to the Google bar here.

6 And, again, the jury has heard testimony about fees of
7 30 percent and 15 percent. Why do you have 29.4 percent?

8 **A.** Well, here I just calculated the average or effective fee
9 that Google is getting from the fees. The way to think of it
10 is as following: Imagine two developers; one pays 30 percent,
11 one pays 15 percent. You might think, well, the average
12 between 30 and 15 is 22 and a half percent. Well, that's true
13 if you're just counting developers. But if the developer
14 that's charged 30 percent is selling a million dollars of
15 product and the developer that's charged 15 percent is selling
16 \$1 worth of product, then the fee is pretty much going to be
17 30 percent on average.

18 Here, what this says is that most of the charges happen --
19 most of the value of the charges happen at 30 percent and not
20 at 15 percent.

21 **Q.** Now, the jury has heard some testimony that after this
22 litigation began, Google reduced some of its fees on the first
23 year of subscription, the first million dollars, to around
24 15 percent.

25 How would those changes affect your calculation of

1 Google's effective fee?

2 **A.** It would cause the 29.4 percent to drop. This was
3 calculated for 2020, the 29.4 percent, so it would drop a bit.

4 If we kind of think a back-of-the-envelope calculation,
5 80 percent, roughly, of Google's -- of the Play revenues are
6 coming from fees on games, which are typically at 30 percent.
7 So even if all the rest of the 20 percent were sold at a fee of
8 15 percent, that would average to about 27 percent. So this
9 could drop, say, to 28, 27 and a half, 28 and a half. That
10 would be the range that I would expect it to be.

11 **Q.** Now, you testified that this chart suggested but for the
12 tie, Google would not be able to charge the same rates for
13 Google Play Billing.

14 If the tie is severed and the fee that Google can charge
15 for payment solutions goes down, could Google introduce new
16 fees on distribution, for instance, that developers would have
17 to pay on top of any charge for Google Play Billing?

18 **A.** Well, my analysis didn't include what Google might do were
19 the tie to be severed. I have observed that Google has never
20 charged for anything but the in-app sale of digital content,
21 and they could do other things already. So I think it's
22 unlikely, but that was not part of my analysis.

23 **Q.** Now, you mentioned earlier the case study that happened
24 between 2011 and 2021 or so where some people were exempt from
25 the tie essentially. What happened to the fees that Google

1 charged at the time for those developers that were at least
2 arguably under the exception?

3 **A.** So developers that were under the exception, Google would
4 offer them fees that were much lower than the 30 percent. I
5 recall them to be in the range of 10 to 15 percent; and even at
6 those lower rates, there were developers who chose not to use
7 Google Play Billing. I think Hulu and I think Spotify maybe.
8 There were several developers that chose not to take it even at
9 that better deal.

10 **Q.** So let's go to the next slide. And this is from
11 Exhibit 360 at page 24. That's in evidence.

12 And what are you showing us here about the current level
13 of Google's pricing?

14 **A.** So what this slide shows, this comes from a document I
15 obtained from Google, and I want to point your attention to the
16 two blue boxes at the right. The top one has 6 percent blended
17 average; the bottom one has 10 percent blended average.

18 The top one is Google's estimate of their break-even fee,
19 which means that if they would have charged 6 percent, they
20 wouldn't lose money and they wouldn't make money on
21 Google Play.

22 And what we see in the 10 percent blended average, that is
23 what Google believes they could charge -- the fees they could
24 charge developers in this market; in other words, what they
25 could charge were the tie to be severed.

1 So what we see here is that the current, say, 30 percent
2 is five times their cost, three times what they believe a
3 blended average cost-plus or what would be paid in the market
4 could be achieved.

5 **Q.** And have you seen other documents other than this one that
6 showed you what Google thought internally would be the
7 consequence of severing the tie?

8 **A.** Yes, I have. I recall at least one document that had an
9 analysis that asked the question: Were Google to sever the
10 tie, what would happen? And they had pros and cons and
11 implications.

12 Under the pro, I recall them writing it promotes
13 competition, which obviously is true if you sever the tie. And
14 in the con, one of the items they listed was a race -- likely
15 race to the bottom on fees with their potential competitors.
16 So Google was well aware that severing the tie would put price
17 pressure on payment solutions that they could provide.

18 **Q.** Now, you talked about the fees to the developers. What
19 would you expect to happen to the price to consumers if the tie
20 were severed?

21 **A.** My expectation would be that prices of, say, digital
22 content to consumers would go down because some of the savings
23 from the reduced fees would naturally be passed on to the
24 users.

25 **Q.** Have you tried to quantify what would be Google's rates

1 exactly if the tie is severed or how that would affect prices
2 to consumers?

3 **A.** No, I have not.

4 **Q.** And why not?

5 **A.** Because what I was tasked to do is answer the question:
6 Is Google's conduct anticompetitive and does it cause harm?
7 The answer to that is clear. I was not asked to quantify by
8 how much. That would be only needed were I to try to quantify
9 damages.

10 **Q.** So the next anticompetitive harm you mentioned was harm to
11 innovation and quality. So let's go to the next slide and --

12 **THE COURT:** Sorry. Before we do that, so going back
13 to the developer's fees. All right? Let's say in a
14 hypothetical world Google eliminated all fees. It went from
15 30 percent to zero. Why do you expect a user would see any
16 benefit from that in terms of the prices the user pays for an
17 app?

18 **THE WITNESS:** So if I may, let me start with a
19 different example and then go back in here. Thank you.

20 **THE COURT:** You're the expert.

21 **THE WITNESS:** Imagine that I decide to open a pancake
22 shop, and I did some back-of-the-envelope calculations that
23 tells me this business will be profitable with the current
24 price that I believe I'm going to charge and what it's going to
25 cost me to buy flour and eggs and milk and so on.

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1 And now I've set the price, I'm doing well, and suddenly
2 the cost of milk and eggs drop. Well, it means that on every
3 set of pancakes, I'm going to earn more money that I sell. If
4 I drop the price a little bit, I could sell more and more goods
5 and I'm going to get a wider margin than I would have gotten
6 were I have to reduce the price previously.

7 So when you change the cost of the goods I use to produce
8 my final output, then microeconomic analysis shows clearly that
9 some of that will optimally be passed on to users.

10 This is basically --

11 **THE COURT:** You'll make it up with higher volume
12 because you're selling more?

13 **THE WITNESS:** Exactly. Exactly.

14 **THE COURT:** Okay. Thank you.

15 **THE WITNESS:** If I may, you could think of it almost
16 like a two-step process. Here's my price, here are my costs,
17 and I'm selling a certain amount. When my costs drop, that's
18 one boost to my profits. But now because of this wide margin,
19 I could afford to shave this down a little bit and then sell
20 even more.

21 **THE COURT:** Okay. Thank you.

22 **THE WITNESS:** Sure.

23 **THE COURT:** Go ahead.

24 **BY MR. EVEN:**

25 **Q.** So turning to innovation and quality.

1 On this slide, let's take these one by one. First of all,
2 you're showing us some features I understand. Let's talk about
3 these.

4 The first one you say is "No customizable user interface."
5 What do you mean by that?

6 **A.** So imagine that you're a developer with an app and you
7 have a certain aesthetic to it, you know, a certain set of
8 colors, et cetera, and you want everything within your app to
9 have that type of aesthetic.

10 Well, Google Play Billing has this one-size-fits-all
11 nature. They don't allow you to customize what it's going to
12 look like. Other payment solution providers do.

13 **Q.** The next one is "No ability to distribute funds to
14 third-party sellers." When does that kick in, or what kind of
15 developer would need that?

16 **A.** So developers that are marketplaces would need that.
17 Let's take an example. Bandcamp is a marketplace that connects
18 fans with music bands; and those bands through Bandcamp, they
19 sell music, which typically is digital content, and they sell
20 merchandise like caps and T-shirts and so on. And what
21 Bandcamp does is it helps these bands sell the products to
22 users or their fans, it collects revenue, and then it keeps
23 some of the revenue to itself and some has to get split and
24 sent to the bands themselves. That would be a typical
25 marketplace.

1 Google Play Billing doesn't allow that distribution of
2 funds to third-party sellers. Bandcamp used PayPal when they
3 were allowed to do that for that reason -- or at least for that
4 reason.

5 **Q.** The third one is "No ability to use across platforms."
6 What do you mean by that?

7 **A.** So a good example for this would be a developer like
8 Microsoft. So Microsoft sells software that could be used in
9 the Android's ecosystem, on Mac computers, on PCs. And
10 Google Play Billing only works in the Android ecosystem, and it
11 doesn't -- is not intended to work on PCs or Macs.

12 So a company like Microsoft, if they weren't forced to use
13 Google Play Billing, they could use either something that they
14 build by themselves or, say, they purchased from PayPal, a
15 payment solution that would work across other platforms. Now
16 they have to splinter it because they have to use different
17 solutions on different platforms.

18 **Q.** And, finally, you say that there's no ability to use when
19 selling physical goods and services. What does that mean?

20 **A.** Well, as we discussed earlier, payment processing could
21 work for any kind of good. The no ability is because, just
22 like Google forces developers to use Google Play Billing for
23 in-app digital content, it prohibits developers from using
24 Google Play Billing for any physical goods. So anything that
25 you would buy, like a binder on Amazon or a ride through Uber,

1 they're not allowed to use Google Play Billing.

2 So if I'm a company where I'm selling both digital and
3 physical goods, I now have to integrate two different payment
4 solutions rather than just one.

5 **Q.** Now, are these the only features that Google Play Billing
6 lacks?

7 **A.** No. There were many others. So, for example, in some of
8 the correspondence between YouTube and the Play folks within
9 Google, there's a mention of, if I recall, dozens of features
10 that YouTube wanted and Google Play Billing didn't offer.

11 There are historical examples of developers like
12 meditation app Calm that wanted the ability to use one-day
13 subscriptions to give users the ability to try something
14 without having to commit. Google Play Billing didn't offer
15 one-day subscriptions. So those are some examples.

16 **Q.** So let's go to your third and final opinion here, and that
17 speaks to something about reinforcing this time of Google's
18 market power, which you mentioned earlier.

19 Can you explain how a tie can reinforce market power in
20 the tying product?

21 **A.** So the idea of what's happening here is as follows: So we
22 have distribution that Professor Bernheim discussed yesterday,
23 we have payment solutions that I'm talking about today, and
24 Google is leveraging their power in distribution to tie --
25 that's the tying product -- to tie payment solutions.

1 If other major players, you know, Square, PayPal,
2 et cetera, would be able to enter and compete fairly for
3 payment solutions, that would help them create relationships
4 with developers who are on one side of this distribution
5 market, and that would help solve the chicken-and-egg problem
6 to then migrate over and start being successful in
7 distribution.

8 **Q.** So you mentioned the chicken-and-egg problem. At a high
9 level, what is a chicken-and-egg problem?

10 **A.** Sorry for the jargon. The chicken-and-egg problem could
11 be described as follows for two-sided markets: Professor
12 Bernheim explained yesterday the nature of two-sided markets.
13 The developers are going to use Play because they believe there
14 are many users. Users use Play because they believe there are
15 many developers.

16 It's very hard to penetrate an incumbent successful
17 two-sided market. Because if I now started a new distribution
18 app and I came to a bunch of developers and say, "Hey, join my
19 store," they say, "Well, you don't have any users." And if I
20 turn to users and say, "Hey, download my store," they say,
21 "Hey, you don't have any developers."

22 Once a company like PayPal or Square would be able to
23 provide these kind of payment solutions, they create
24 relationships with developers and developers could see them as
25 viable and successful partners.

1 Now, with that side of the market already in their
2 backyard, they could create a store and turn to developers and
3 say "We have this relationship. How about putting your app on
4 my store? I have these great terms." There would be no reason
5 for developers not to try that, and that could jump start a
6 competition in distribution.

7 **Q.** So let's go to the next slide. And this is from
8 Exhibit 388 at page 98. It's in evidence.

9 And as a first step, where is this slide coming from?

10 **A.** So this is a slide from one of Google's documents, one of
11 their internal presentations, that describes pretty much the
12 rather sophisticated and complex scenario that I just
13 described.

14 **Q.** And what was the context in which Google was trying to lay
15 out this sophisticated or complex idea?

16 **A.** So as you see here from the title "How would ecosystem
17 evolve over time," evolve over time if the tie were severed, if
18 we were not forcing developers to use Google Play Billing.

19 **Q.** So let's take a look at this slide more closely.

20 First of all, what is the list of companies that we see on
21 the right-hand side at the bottom?

22 **A.** So you see GPay, Google Pay; Square; PayPal; Stripe;
23 Amazon; Facebook. These are all providers that Google believes
24 would be entrants into payment solutions were they to sever the
25 tie.

1 Q. And then there's a number processed on the left side. So
2 let's take a look at that and take it one by one.

3 A. Sure.

4 Q. So we see Step 1, "Selective Deintegration." What does
5 that mean?

6 A. Okay. So this would be Step Number 1. Imagine that
7 tomorrow Google severs the tie. There will be developers that
8 immediately are going to choose alternative solutions because
9 we know that during the time of the exemption, developers chose
10 to do that.

11 So we're going to get this entry by some of these payment
12 solutions that currently could only sell in nondigital goods.
13 That's what you see on the right-side top of that black box.
14 That's why they're sitting there. And you can see that there's
15 a number one with an arrow. That arrow moves them into digital
16 goods. So that would be Step 1.

17 And then they describe how contagion leads to more
18 deintegration. Developers are going to learn about other
19 developers who successfully deintegrated, and that will give
20 them an incentive to go ahead and disintegrate.

21 Q. So then let's go to consolidation to a few primary service
22 providers. What does that mean?

23 A. So you could see that that number two also appears next to
24 the names of those companies because once the tie is severed,
25 there could be dozens of payment solution providers that are

1 going to try to sell their goods. Typically, after an initial
2 period, the market shakes up a bit and a few prominent
3 providers that have the best solution products and possibly the
4 best prices, they're going to be the ones that remain, and here
5 are examples of what Google thinks about who might remain as
6 consolidated players in this market.

7 And then they describe that these primary service
8 providers would push towards distribution and discovery;
9 namely, that's the point where they could turn to developers
10 and say "We want to distribute. Come join our store."

11 **Q.** And what does the third step, "Displacement," mean?

12 **A.** So displacement basically means that Google is no longer
13 going to be the only game in town, displacement of Google Play
14 as the preferred app store. Currently Google Play is the
15 preferred app store.

16 **Q.** Now, you said this is a rather complex process. How
17 realistic is this three-step, ladder-up scenario?

18 **A.** Well, not only is it realistic enough for Google to pay a
19 lot of attention to it, in the same documents where this was
20 provided, Google has, I recall, three examples where they
21 discuss a ladder-up. That's what they call this. You know,
22 you enter in payments, then you ladder up into distribution.

23 One good example would be Shopify, which was a company
24 that basically dealt with payments for merchants and then
25 ladder up to become an e-commerce platform.

1 Another example of that might be more familiar is Netflix.
2 That, again, is in their documents where Netflix entered at the
3 time that Blockbuster existed by just distributing DVDs for
4 rent. Then it went into streaming as one of the first players;
5 and then through that, they were able to enter the market for
6 content creation. And now they are content providers.
7 Basically they have their own content.

8 So Google gave some examples in their documents.

9 **Q.** I want to switch gears for a second and let's go and talk
10 a little bit about market definition. I don't want to spend
11 too much time on it, but briefly.

12 What is the relevant market that you define here?

13 **A.** So for me, the relevant market is payment solutions for
14 in-app purchases of digital content on Android smartphones.

15 **Q.** So I'm going to refer to that as in-app payment market if
16 that's okay. It's a lot --

17 **A.** It's a mouthful.

18 **Q.** -- of words.

19 We heard from Professor Bernheim at some length yesterday
20 about market definition and what is the process of going about
21 doing that. Do you generally follow the same methodology laid
22 out by Professor Bernheim?

23 **A.** Yes. I followed the standard methodology.

24 **Q.** And what alternatives to payment -- well, let me take a
25 step back.

1 What are the products in your market?

2 **A.** So the immediate products in my market are going to be any
3 product that could do what Google Play Billing does. So any
4 payment solution provider for digital content on Androids. So
5 the PayPals and the Squares, all those companies, their
6 products are immediately in the market.

7 **Q.** So what alternatives to payment solutions for in-app
8 purchases did you consider as potential candidates for
9 inclusion in this market?

10 **A.** So as Professor Bernheim explained yesterday, the exercise
11 is: If suddenly all these payment solution products become
12 more expensive or become of lower quality, what would I be able
13 to substitute to as a developer who wants to earn money?

14 Currently there are two other ways that you could earn
15 money. One would be instead of selling these goods within the
16 app, you would sell them through a web store. Alternatively,
17 you would just forego selling goods altogether and switch to an
18 advertising model.

19 **Q.** So let's begin with web purchases. Can you explain what
20 are web purchases?

21 **A.** Sure. So web purchase would be the situation where you're
22 in an app, you want to purchase something but you can't
23 purchase it in the app. You leave the app, you open a web
24 browser, and then you would find whatever you're trying to buy
25 from that developer, pay for it, and then you could go back to

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1 the app and continue doing what you're doing.

2 Q. And what did you conclude regarding the substitutability
3 of in-app payment solutions with web purchases?

4 A. That web purchases are not a viable substitute for in-app
5 purchases.

6 Q. And why is that?

7 A. It basically comes down to friction. There is so much
8 more friction when you have web purchases than there are when
9 you have in-app purchases.

10 Q. Let's take a look at the next slide.

11 What are you showing us here about the friction involved
12 in the different processes?

13 A. So here what we see are the three steps necessary to do an
14 in-app purchase for the very first time you're doing an in-app
15 purchase.

16 So let's imagine that you're in some app, a game. You
17 decide that you want to purchase something in the game, you
18 would click on that. That's number one.

19 That brings you to step number two where you're
20 interacting with Google Play, and this is what I meant by the
21 standard way it looks. It always looks like you see it here on
22 the screen. The developer can't change the way that it
23 appears. And now you can see -- maybe it's a little hard to
24 see -- "Add credit or debit card" in the middle. I would need
25 to do that if I never gave those information to Google Play

1 Billing.

2 Once I complete the credentials and that information, I go
3 to Step 3 where it's just pay by and I go back to the app.

4 **Q.** Let's go to the next slide.

5 What are you showing us here about this process?

6 **A.** The next time I want to buy something within the apps, I
7 don't have to provide the credit card or debit card
8 information. So I only have what used to be Step 1 and 3 as
9 Step 1 and 2. I find what I want and I buy it.

10 **Q.** And why do you call this one the typical in-app purchase?

11 **A.** Because the first purchase only happens once, and every
12 other purchase is going to happen after that; therefore, that
13 would be typical.

14 **Q.** So let's go to the next slide.

15 What are you showing us here about the different
16 processes?

17 **A.** This is a representation of what a web store purchase
18 would look like.

19 **Q.** And what are you showing us here about what this process
20 entails?

21 **A.** So there are eight steps. I'll just walk through them
22 quickly. I think they'll be quite clear.

23 So I'm in the app. I decide that I want to purchase
24 something. So first I have to leave the app, and then I have
25 to open the browser. That's going to be Step 2. Once I open

1 the browser, I have to navigate to the developer's website or
2 store. So I have to search for it. Hopefully I know the name
3 of the developer and what I'm looking for.

4 I will then search. Once I find it, I will go to the
5 store within the developer -- that's going to be Step 4 -- and
6 I need to find the digital content. They may be selling many
7 things.

8 Once I've found the digital content, I now go to Step 5.
9 I have to enter my payment information. If I already did that
10 in the past, then Step 5 would disappear just like Step 2
11 disappeared on the first slide, but the other steps would
12 remain.

13 I then have to confirm the successful payment in Step 6,
14 exit the browser, and then return to the app and continue what
15 I'm doing.

16 **Q.** And why do you believe that the number of steps a user has
17 to go through to complete this process makes this a poor
18 substitute for an in-app sale?

19 **A.** Because it is well established, both in publicly available
20 research and these companies who have these processes know very
21 well, that any additional amount of friction in any process
22 leads to dropoff along the process. So friction would mean a
23 lower likelihood of completing the process.

24 **Q.** Have you ever studied the effects of friction on online
25 commerce or online purchases?

1 **A.** Yes. Both at the times I was at eBay and when I was at
2 Amazon, there were many projects that dealt exactly with
3 friction.

4 **Q.** Now, Mr. Pichai testified in this case that leaving an app
5 to make a purchase, quote, "breaks the experience for the
6 users." How does that relate to your opinion?

7 **A.** It relates exactly to what I'm showing you here on the
8 slide. Not leaving the app, there were two steps and you're
9 done; leaving the app, a lot more friction and a lot more
10 dropoff.

11 **Q.** Now, could a developer streamline what we're seeing here
12 on the slide somehow by -- for instance, by putting in links in
13 their app to cut through some of the steps at least?

14 **A.** In principle, yes. If you look at what's here on the
15 slide, then if at Step 1 there was a link that says "Click here
16 to purchase this item," you would go immediately to Steps 5
17 or 6. So you would circumvent quite a bit. However, Google
18 doesn't allow that.

19 **Q.** And let's go to the next slide, which is Exhibit 8022,
20 which is in evidence.

21 What are you showing us here that's related to the
22 possibility of using links?

23 **A.** So this is part of Google Play payment policy, and in
24 particular you'll notice in the title "Antisteering Provision."
25 "Antisteering provision" is what is -- the term used in a

1 provision in a contract that says "You cannot do this somewhere
2 else" or "You could not supply this somewhere else" or "You
3 could not buy this somewhere else."

4 And here, in particular, there's a list of thou shall not.
5 And in particular we see here at the bottom (as read):

6 "In-app user interface flows, including account
7 creation sign-up flows, that lead users to an app to a
8 payment method other than Google Play Billing system."
9 That is prohibited.

10 **Q.** You also mentioned advertising --

11 **THE COURT:** If I may, so this policy, is it your
12 understanding it applies to each and every app on the Google
13 Play Store?

14 **THE WITNESS:** For digital content, for the sale of
15 digital content within the app, yes.

16 **THE COURT:** For each and every digital content app on
17 the Play Store?

18 **THE WITNESS:** That is my understanding.

19 **BY MR. EVEN:**

20 **Q.** So let's turn to advertising, which you mentioned that you
21 also considered as a potential substitute or to include in the
22 market.

23 What did you conclude about the substitutability of
24 advertising in in-app sales of digital goods?

25 **A.** I concluded that advertising is not a viable substitute

1 for in-app digital content.

2 **Q.** And can you explain very briefly why not?

3 **A.** Sure. So I think the easiest way to think about this is
4 as follows: We know that many developers choose to use in-app
5 digital content without advertising even though they're paying
6 30 percent fees. If they advertise, they wouldn't pay any fees
7 on whatever revenue they're getting from advertising.

8 So you could think of developers that are currently
9 selling in-app digital content as potentially falling into two
10 groups. One group would be developers for whom using ads would
11 significantly deteriorate the value of their product. So think
12 of a game where you want to pay attention to the interaction or
13 streaming services. Any ad really interrupts that, it
14 deteriorates the quality. And, indeed, those developers choose
15 not to use advertising.

16 Alternatively, think of a developer like the *New York*
17 *Times*. Before the Internet even existed, the *New York Times*
18 sold subscriptions to consumers who bought the *Journal*, the
19 *Times*, and they sold advertising to advertisers who advertised
20 within the pages of the *New York Times*.

21 They're doing the same thing online. They are charging
22 for digital content, namely, access to the *New York Times*, and
23 they are charging -- they are displaying ads and getting ad
24 revenue.

25 Google Play is doing the same thing. They're charging a

1 fee for distribution, and they're also allowing developers to
2 advertise. So advertising for these developers is an
3 incremental source of income. It's not a substitute source of
4 income.

5 **Q.** Let's turn to the geographic definition of the market, if
6 I may.

7 Have you determined the geographic scope of the payment
8 solution market?

9 **A.** Yes, I have.

10 **Q.** And what is the geographic market that you define?

11 **A.** It is global excluding China.

12 **Q.** And we've heard a little bit from Professor Bernheim
13 yesterday as to why the market is global, excluding China, in
14 his defined market. Is your analysis tracking essentially
15 Professor Bernheim's?

16 **A.** Pretty much, yes.

17 **Q.** And if the market here were found to be geographically
18 narrower, for instance, the U.S. only because of where we are
19 and where this court is, et cetera, would that change any of
20 your opinions?

21 **A.** No, it would not.

22 **Q.** Why not?

23 **A.** Because the conduct that we're discussing and the harm is
24 happening here in the United States -- the forcing, the
25 harming, and the reinforcing -- and if anything, the market

1 power that the Google Play has in the United States, if I
2 recall from yesterday's presentation by Professor Bernheim, is
3 even higher than it is globally. So it would be even more
4 pronounced.

5 **Q.** So I want to talk a little bit very briefly about one
6 other thing that may be relevant to your analysis.

7 You focused on a tie, and the jury has now heard about a
8 program Google launched that is called User Choice Billing.
9 Does the User Choice Billing program alter your opinions in
10 this case in any way?

11 **A.** No, it does not.

12 **Q.** And before I turn to why the program does not change your
13 opinion, can you remind the jury briefly what is the User
14 Choice Billing program?

15 **A.** Yes. User Choice Billing is a pilot program that Google
16 started in 2022 where they offered a handful of developers -- I
17 think I'm remembering Hulu and Spotify, but I'm not 100 percent
18 sure if I'm remembering two of those participants -- where they
19 said "Alongside Google Play Billing you could offer another
20 payment solution and then give users the choice of which ones
21 they want to choose."

22 **Q.** And why is it your view that the User Choice Billing
23 program does not solve the issues that you have identified that
24 arise from the tie?

25 **A.** For two primary reasons. First, it doesn't sever the tie.

1 You still have to integrate Google Play Billing. So that's
2 still there.

3 Second, the way the fees were designed for User Choice
4 Billing, they were designed in a way that it would not be
5 profitable for a developer to actually adopt User Choice
6 Billing and, instead, just stick with Google Play Billing.

7 **Q.** Let's go to the next slide.

8 And what are you showing us about those fees here?

9 **A.** So this describes how User Choice Billing works. So if
10 you're the developer that would be approached with this
11 program, you'd be offered the following: If you just use
12 Google Play Billing, you will pay 30 percent. If you choose to
13 use another service, another payment solution provider
14 alongside Google Play Billing and a user will click on that,
15 then whatever you pay to the other solution you're paying,
16 you're going to pay us 26 percent. So, in other words, we're
17 going to knock off 4 percent from the 30 percent and create a
18 new fee that will be latched onto whatever you're paying to
19 your own solution provider.

20 **Q.** So let's go to the next slide, which is Slide 25, and this
21 slide has also Exhibit 360 at page 24.

22 What are you showing us about what this -- the structure
23 for User Choice Billing?

24 **A.** So the previous slide was -- you know, this is how Google
25 presents it -- this is how a developer should think about it.

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1 If I just stick to Google Play Billing, I pay 30 percent. What
2 will I pay if I use User Choice Billing?

3 Well, let's imagine that I'm as good as Google is when it
4 comes to the cost of processing. Recall from a previous slide
5 Google estimated that it cost them 6 percent to do the
6 processing in the payment solutions. Well, if I'm as good as
7 Google is, it means that it's going to cost me 6 percent for
8 payment solution and another 26 percent for Google. That's
9 32 percent. That is not such a good deal for me unless it's
10 really important for me to have my own payment solution because
11 I want some functionality that is important for me.

12 **Q.** So in your view, does User Choice Billing offer a real
13 choice to developers?

14 **A.** No, it does not.

15 **Q.** And do you believe that Google was aware of the fact that
16 this cost structure may deter people from actually opting into
17 the program?

18 **A.** Google's own analysis suggests they are very well aware of
19 this.

20 **Q.** Let's take a look at the next slide. This is Exhibit 388
21 at 46.

22 And what does this show us in terms of Google's design of
23 the User Choice Billing program at a high level?

24 **A.** Be patient with me. This is a challenging slide to
25 describe.

1 So remember that I started with that 30 and the 26, and
2 there was a 4 percent drop. It could have been a 2 percent
3 drop or a 10 percent drop in that new fee.

4 This slide starts with the following statement, which is
5 in the title of the slide: "Game theorizing price level."
6 Some large developers would take advantage of billing
7 optionality no matter the price, meaning that if Google said,
8 "If you want to use billing optionality, in other words, use
9 your own payment solution, and you're still going to have to
10 pay us 30 percent, there will be some developers that will say,
11 'Fine, we're using our own solution.'"

12 And what the slide describes at the very left at the
13 bottom where it says "Core Strategic Asset," this describes
14 that jump at what would happen if we just open it up and we
15 don't offer any other fee but 30 percent. It doesn't matter
16 what you use, you pay 30 percent. That jump are those
17 developers for whom this is a core asset, and they're going to
18 switch.

19 **Q.** And what is it that Google currently does in terms of
20 where it's placed the actual new fee for transactions that
21 don't involve Google Play Billing?

22 **A.** Sure. So they didn't set that fee at 30. They set it at
23 26. So we could see it here. Where it would sit given the
24 scale of the graph, it would sit roughly around here. We see
25 that 4 percent on the top as opposed to zero corresponds to a

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1 26 percent extra fee as opposed to 30.

2 And as we see here, that blue line between that core
3 strategic asset developers that would adopt even if there's no,
4 you know, lower fee of 26, even a 30, that blue line hardly
5 changes its height until we reach an area where it becomes
6 cheap enough for User Choice Billing to be a viable option for
7 developers.

8 **Q.** Let's go to the next slide.

9 And what are you showing us here where the line all of a
10 sudden jumps up?

11 **A.** So if you go back mentally to where I said, "26 plus 6,
12 that's 32, that's too much for me, I'm not going to use User
13 Choice Billing," well, what about 25? No, still too high. 24?
14 No. It's kind of break even. 23? Oh, I might consider it.
15 22? Now it's looking good.

16 That's what happens as we move to the right. That green
17 region is where we're hitting those numbers that are
18 commensurate with this being a good deal for a developer. That
19 would probably be an extra fee on the order of 18 to
20 24 percent, roughly, given the competitive benchmarking.
21 26 percent is way above that.

22 **Q.** Let's go back to your assignment.

23 In your opinion, Professor Tadelis, does Google's conduct
24 related to Google Play Billing harm competition and consumers?

25 **A.** Yes, in my opinion, it does.

TADELIS - CROSS / MACH

1 Q. What would you expect to see happen should Google's
2 coercive tie between Google and payment be severed?

3 A. What I would suspect is entry by these competitors would
4 happen. There would be price pressure on billing solutions and
5 prices -- fees would go down that developers and consumers
6 would benefit from, and innovation would be increased and
7 developers would have more variety of payment solutions to
8 choose from.

9 Q. Now, would severing the tie resolve -- or necessarily
10 resolve all the competitive problems with Google's conduct?

11 A. Not necessarily. As we just saw with User Choice Billing,
12 you could have the appearance of severing the tie; but if
13 Google is able to leverage its market power in distribution,
14 they could design fees like User Choice Billing that would
15 change what is now a forcing tie into an economic tie. It's
16 like you could choose that, but it's not economically in your
17 best interest.

18 MR. EVEN: I pass the witness.

19 THE COURT: Okay. Let's stand up for a bit. We'll
20 take our break in about 20 minutes.

21 (Pause in proceedings.)

22 THE COURT: Okay.

23 (Pause in proceedings.)

24 THE COURT: Okay. Let's get going.

25 \\\

TADELIS - CROSS / MACH

CROSS-EXAMINATION

BY MR. MACH:

Q. Good morning, Professor Tadelis. Nice to see you again, sir.

A. Nice to see you, Mr. Mach.

Q. Now, you testified that the conduct at issue here reinforces what you call Google's market power; right?

A. Reinforces Google's market power in the distribution market.

Q. Right. So I'd like to explore for a minute the reasons that you think Google has market power. Does that make sense?

A. Sure.

Q. And one of those reasons is that you think Google charges more than payment processors charge; right?

A. That is a consequence of their market power.

Q. Sir, one of the reasons that you believe Google has market power is that it charges more than payment processors; right, sir?

A. Than payment solution providers.

Q. And when you say "payment solution providers," you're distinguishing that from the firms that are listed in the chart that you were shown by Mr. Even; is that what you're doing?

A. I'm not sure I understand the question.

Q. I'll clarify.

I'm just trying to understand. When you say "payment

TADELIS - CROSS / MACH

1 solution providers," the firms you're talking about are firms
2 like Braintree, PayPal, Square, Stripe, et cetera; right, sir?

3 A. That's correct.

4 Q. Okay. And one of the reasons that you believe Google has
5 market power, is that you believe they charge more than firms
6 like that; correct?

7 A. They are charging more than firms like that significantly,
8 yes.

9 Q. Yes. And that's one of the reasons you believe that
10 Google has market power; right?

11 A. Uh-huh.

12 Q. And you conduct a comparison of Google's -- Google Play
13 Billing fees with the fees charged by firms like that, like
14 Braintree, PayPal Stripe, et cetera; correct, sir?

15 A. That's correct.

16 Q. So I want to explore both sides of that comparison. Okay?

17 A. Sure.

18 Q. Now, you already testified today that Google doesn't
19 charge 30 percent on average for those transactions; right? It
20 charges something less than that?

21 A. It was 29.4 percent, yes, in 2020.

22 Q. In your report, you used 29.4 percent; correct?

23 A. That is correct.

24 Q. And you refer to that as Google's standard commission;
25 right, sir?

TADELIS - CROSS / MACH

1 **A.** I don't recall the exact words that I used, but that is
2 the calculation that I did, which I explained.

3 **Q.** It wouldn't surprise you if you referred to it as a
4 standard commission; right?

5 **A.** It wouldn't surprise me.

6 **Q.** And you know, in fact, Google does not charge a flat
7 30 percent commission; right?

8 **A.** It depends on the circumstances, that's correct.

9 **Q.** Right. And among those circumstances is the fact that you
10 know that 99 percent of developers who use Google Play Billing
11 pay 15 percent and not 30 percent; right?

12 **A.** I recall seeing that number. Their revenues are very low
13 but, yes, something along those lines.

14 **Q.** Right. My question is about developers. 99 percent of
15 developers don't pay the 30 percent commission; right, sir?

16 **A.** I believe that's a number that Google presented, yes.

17 **Q.** And you agree with it; right? I'm just trying to be
18 clear.

19 **A.** I can't refute it, correct.

20 **Q.** So let's take a closer look at the products that you
21 compare Google Play Billing against, and to do this I want to
22 put up a demonstrative.

23 Phil, if we could put up Slide 3, please.

24 Now, this is the slide that counsel for Epic presented to
25 the jury in the opening statement. Do you see how it cites

TADELIS - CROSS / MACH

1 your report here down at the bottom?

2 A. Yes, I do.

3 Q. And you recognize these as figures that are drawn from
4 your report; right, sir?

5 A. That is correct.

6 Q. And this is a little bit different than this graphic that
7 you just presented in the sense that here we have Braintree,
8 and in your slide you had a different firm, Paddle; right?

9 A. That is correct.

10 Q. But you do stand by the figures that were presented here
11 to the jury; right, sir?

12 A. Yes.

13 Q. And one thing that I notice when I look at these
14 figures -- and, actually, Phil, let's go to Slide 4, if we
15 could.

16 This was also shown in the opening. Here we have Google
17 added to the slide. Do you see that, sir?

18 A. Yes, I do.

19 Q. And one of the things that I notice when I look at this,
20 is that Google's price appears to be higher than the others,
21 but there's a lot of variation across all of the rates. You
22 agree with that; right?

23 A. Yes, I do.

24 Q. And it's possible that that variation exists because the
25 product that Square is offering and the product that Braintree

TADELIS - CROSS / MACH

1 is offering, for example, are quite different; right?

2 **A.** They have some differences.

3 **Q.** And in order to know whether the comparisons of the
4 products that are shown in this chart is a fair one, you have
5 to understand whether the difference in underlying features of
6 the products is commensurate with the differences in price
7 between the products; right, sir?

8 **A.** That would be fair.

9 **Q.** You didn't attempt to make that comparison, did you, sir?

10 **A.** The evidence about Google's lack of performance with
11 YouTube and other developers suggest that they do not have a
12 superior product. So I believe that in my analysis it suggests
13 that, you know, double, triple that we see at 15 percent even,
14 wouldn't probably be justified by quality.

15 **Q.** Sir, could you please take Volume 1 of the binder that
16 you've been handed?

17 **A.** Volume 1, yes.

18 **MR. MACH:** And, Your Honor, behind Tab 1 in Volume 1
19 is his deposition.

20 **THE COURT:** Okay.

21 **MR. MACH:** And I'd like to turn to page 188 starting
22 on line 25 and proceeding to the next page, 189, line 2.

23 (Pause in proceedings.)

24 **THE COURT:** That's fine.

25 **MR. MACH:** Thank you, Your Honor.

TADELIS - CROSS / MACH

1 **BY MR. MACH:**

2 **Q.** Are you there, sir?

3 **A.** Yes, I am.

4 **Q.** Could we publish this, Phil.

5 Now, in your deposition you were asked about the
6 comparison of whether the underlying features in the products
7 and the differences in price were commensurate with those
8 differences in features. Do you recall that?

9 **A.** Yes, I do.

10 **THE COURT:** Just read the Q and A. Don't recall.
11 Just read it and move on.

12 **MR. MACH:** I'm happy to, Your Honor.

13 **THE COURT:** Okay. All right.

14 **BY MR. MACH:**

15 **Q.** And you were asked on line 25 (as read):

16 "You don't attempt to make that comparison, do you,
17 sir?"

18 You see that?

19 **A.** Yes, I do.

20 **Q.** And your answer was (as read):

21 "No, I do not."

22 Do you see that?

23 **A.** Yes, I do.

24 **Q.** Essentially, in order for the comparisons to be
25 meaningful, the products offered by the providers need to be

TADELIS - CROSS / MACH

1 similar; right?

2 A. Similar enough.

3 Q. Right. But none of the products shown in this chart,
4 except for Google's, offer app distribution; right?

5 A. That is correct.

6 Q. And obviously there are several other companies out there
7 that do offer app distribution on Android; right?

8 A. Yes.

9 Q. But you don't compare Google's fees for any other company
10 that does app distribution and payment processing, do you?

11 A. That is correct.

12 Q. For example, you know about the Samsung Galaxy Store;
13 right?

14 A. Yes, I do.

15 Q. And you know that Samsung's list price for payment
16 processing in that store is 30 percent; right?

17 A. List price, yes.

18 Q. And had you included the Samsung Galaxy Store in this
19 chart, we'd see it looking quite different; right?

20 A. I wouldn't be able to include it the way I could include
21 Google.

22 Q. Well, let's go to Slide 5, please.

23 Now, here on Slide 5 you see the list price that Samsung
24 has for payment processing in the Galaxy Store; right, sir?

25 A. The list price, yes.

TADELIS - CROSS / MACH

1 Q. And then the elephant in the room is Apple. You know,
2 that Apple charges a similar 15/30 commission structure as
3 Google; right?

4 A. That is my understanding.

5 Q. So let's put that up as well. Let's do Slide 6, please,
6 Phil.

7 Now, sir, all three of the firms that we see in red on
8 this chart do something different than the firms that we see in
9 blue on this chart; right?

10 A. That is correct.

11 Q. And you're not offering the opinion that Samsung has
12 market power; right, sir?

13 A. No, I'm not.

14 Q. Essentially what Google is selling and what Stripe is
15 selling, they are not the same thing; right?

16 A. That depends.

17 Q. Well, you adopt opinions from Professor Bernheim in your
18 reports; right?

19 A. Yes, I do.

20 Q. And you were here in court yesterday when
21 Professor Bernheim testified; right, sir?

22 A. Yes, I was.

23 Q. Then you will recall that Professor Bernheim testified
24 that the fees that Google charges are a combined price for app
25 distribution and payment services. You recall that; right,

TADELIS - CROSS / MACH

1 sir?

2 **A.** I do.

3 **Q.** And you also recall that Professor Bernheim testified that
4 the service fee that Google charges is for app distribution and
5 payment services; right?

6 **A.** I don't recall the exact words he used, but I recall him
7 saying something along those lines, yes.

8 **Q.** Now, obviously a company like Braintree or PayPal, they
9 can't be charging that combined price, right, because they
10 don't offer both of those services?

11 **A.** That's correct.

12 **Q.** Phil, if we could, please, let's go back to Slide 4.

13 Now, I want to just take your comparison for what it is.
14 We'll set that aside for the moment and explore some other
15 aspects of this.

16 You told the jury that you looked at prices for
17 transactions at other sizes and the results remained the same.
18 Do you recall that?

19 **A.** Yes.

20 **Q.** So let's explore that a little bit.

21 So what you have here in this slide is the presentation
22 for the average in-app purchase price of \$9.30; correct, sir?

23 **A.** That's correct.

24 **Q.** You know that is not the most common size of a transaction
25 on Google Play Billing; right?

TADELIS - CROSS / MACH

1 A. That is correct.

2 Q. In fact, you'd have to acknowledge that a \$9.30 change is
3 probably quite rare; right?

4 A. The precise \$9.30 might be rare. The most common one was
5 \$4.99, if I recall.

6 Q. Right. The most common one is \$4.99, and the second-most
7 common one is 99 cents; right?

8 A. That's my recollection, yes.

9 Q. And you didn't report what these figures looked like for
10 those transaction, did you, sir?

11 A. I believe that appears in my expert report.

12 Q. I apologize, sir. I meant you didn't report that here to
13 the jury today, not in your reports.

14 A. That is correct.

15 Q. In fact, you do report some of those results in the
16 documents that you disclosed in advance of trial; right?

17 A. Which -- I'm sorry. I'm confused about what it is that
18 you're asking me I'm reporting.

19 Q. It was a confusing question, so that's fair.

20 I was agreeing with you.

21 You, in fact, do report some of those results in your
22 reports. You just didn't report them here today; right, sir?

23 A. That is correct.

24 Q. All right. So let's take a look at what those look like.

25 Phil, can we please go to Slide 10?

TADELIS - CROSS / MACH

1 Now, sir, do you recognize these as the results that you
2 get for the most common transaction, \$4.99?

3 A. That looks familiar -- I mean, these look like the numbers
4 from my report.

5 Q. Now, going back a minute, we know that most developers
6 don't pay 30 percent. They pay 15; right?

7 A. Developers, yes.

8 Q. So let's go to Slide 11 for a moment.

9 So this is what this chart looks like if you use the most
10 common developer and you use the most common transaction;
11 right, sir?

12 A. That would be correct.

13 Q. So an app developer who chooses to use Braintree at
14 12.4 percent, that would save them 2.6 percent of revenue
15 compared to using Google Play; right?

16 A. And possibly offer them solution options that don't exist
17 with Google Play.

18 Q. Right. Maybe the products have differences too; right?

19 A. Mm-hmm.

20 Q. But that would save them about 2.6 percent of their
21 revenue and the product would not be distributed to billions of
22 Android users at that price; right?

23 A. So that would save them 2.6 percent of revenue, yes.

24 And what was the second part?

25 Q. And for that savings, their product would not be

TADELIS - CROSS / MACH

1 distributed to billions of Android users; correct?

2 **A.** I'm -- so your question is confusing me because I think in
3 your assumption is that if I use Braintree, I can't distribute
4 on Google Play. Is that the underlying assumption?

5 **Q.** I'll try to simplify.

6 Braintree is not going to distribute the app for the
7 developer; correct, sir?

8 **A.** That's correct, yes.

9 **Q.** Now, we talked a moment ago about the fact that 99 cents
10 is the second-most common transaction. Do you recall that?

11 **A.** Yes.

12 **Q.** And you calculated what some of those transactions look
13 like as well; right?

14 **A.** That's correct.

15 **Q.** So let's go to Slide 12, please.

16 Now, what you reported were these figures for PayPal and
17 Stripe; correct, sir?

18 **A.** That's correct.

19 **Q.** You did not include the results if you actually do that
20 transaction across the other firms that you discuss in your
21 report; right?

22 **A.** That is correct.

23 **Q.** Well, I've taken the liberty of running some of those
24 calculations, and I want to ask you about some of the results
25 that I got.

TADELIS - CROSS / MACH

1 So, Phil, let's go to Slide 13, please.

2 So you know that Square charges a flat fee of 30 percent
3 and a percentage fee on top of that; right, sir?

4 **A.** Yes.

5 **Q.** So you know that for a 99-cent transaction, the
6 second-most common transaction on Google Play, Square would
7 actually charge more than Google would charge any developer for
8 that transaction; right?

9 **A.** Are you referencing microtransactions or are you using the
10 listed 2.9 percent plus 30 cents per transaction from Square's
11 standard list?

12 **Q.** I'm using the rates that you disclosed in Table 1 of your
13 report for Square, sir.

14 **A.** I understand. Those rates are not relevant for micro
15 payments, which is why I created this alternative for 99-cent
16 purchases.

17 **Q.** Well, those are the only rates that you're aware of that
18 Square charges; right? You don't report any other rates for
19 Square, do you, sir?

20 **A.** I couldn't find rates for micropayments on Square --

21 **Q.** Right.

22 **A.** -- that's correct.

23 **Q.** You're not aware of Square having a different set of rates
24 that would get you a result different than 33.2 percent, are
25 you, sir?

TADELIS - CROSS / MACH

1 **A.** That is correct.

2 **Q.** Now let's go, please, to Slide 14.

3 Now, this is my math up on the screen. I want to make
4 sure it's right. We can work through them if we need to, but
5 I'll just ask you to simplify it.

6 You recognize these as the fees that would apply to a
7 99-cent transaction if you use the rates that you include in
8 your report; right, sir?

9 **A.** Yes. That would be erroneous, but I understand that.

10 **Q.** Well, you're not disputing that if a Braintree customer
11 wants to process a 99-cent transaction, that Braintree would
12 charge them 52.1 percent of that transaction? You're not
13 disputing that, are you, sir?

14 **A.** I'm not disputing that. I would suggest that a developer
15 who is engaging with the company PayPal that owns Braintree
16 would see that PayPal offers them three alternatives. You
17 could use Braintree or PayPal not for micropayments -- they're
18 not intended for 99-cent transactions -- and pay us more than
19 50 cents on the dollar, or you could use our dedicated
20 micropayment, which would cost you 14.1 percent. I would
21 expect the developer to choose the 14.1 percent.

22 **Q.** Well, you're not disputing that these are the prices that
23 these companies have out in the marketplace that you consider
24 competitive, are you, sir?

25 **A.** I'm not disputing that. It's just not for this kind of

TADELIS - CROSS / MACH

1 transaction.

2 Q. Now, Stripe and Square on this chart, they don't own
3 Braintree; right, sir? They don't have that relationship?

4 A. That's correct.

5 Q. So a Square customer or a Stripe customer, they're going
6 to pay more than Google for those transactions; right, sir?

7 A. No, because I would expect a developer that wants to work
8 with Stripe would look at the 33.2; if they're not optimizing
9 and they're choosing the wrong solution, they would choose the
10 10.1.

11 And I would expect that developer to do their due
12 diligence and realize that Stripe and PayPal micropayments are
13 cheaper than all the other alternatives and they wouldn't
14 consider them.

15 Q. And have you done an analysis of how many transaction are
16 completed at 99 cents on Stripe or Square? You've not done
17 that, have you, sir?

18 A. No, I have not.

19 Q. You don't know that?

20 A. I've not done that analysis.

21 Q. Now, you added into the chart that you presented to the
22 jury a company called Paddle. Do you recall that?

23 A. Yes.

24 Q. So I want to ask you a couple of quick questions about
25 that.

TADELIS - CROSS / MACH

1 Paddle for the \$9.30 transaction is more expensive than
2 the payment processors that you list; right?

3 A. I did not have the information on Paddle's different types
4 of applications. I took a number from the testimony, I
5 believe, that was given that 10 percent was mentioned.

6 Q. Right.

7 A. So I just used it because it was mentioned here in the
8 courtroom.

9 Q. Right. You took a 10 percent price for Paddle. That's
10 what you presented, correct, sir?

11 A. Correct.

12 Q. My question is only that 10 percent price, that's higher
13 than the prices for the peer-payment processors that you showed
14 the jury; right?

15 A. Payment solutions that I showed the jury, yeah.

16 Q. And you read the testimony of Mr. Owens of Paddle; right?

17 A. I read parts of it.

18 Q. And you know then that Mr. Owens testified that he
19 wouldn't describe Paddle as a payment processor but, rather, as
20 something more; right?

21 A. Payment solution. You refer to processor and solution. I
22 view them as different, so I just want to make sure we're using
23 the terms accurately.

24 Q. Well, I do -- I want to make sure of that too, sir.

25 And I just want to be clear. You have repeatedly referred

TADELIS - CROSS / MACH

1 to firms like Braintree, PayPal, Stripe, Square, et cetera, as
2 payment processors; right? You do that?

3 **A.** Payment solution providers. They also process payments,
4 but payment solutions are more than just payment processing. I
5 think that in testimony that was given by Mr. Sweeney, he
6 described the difference that payment processing is just like
7 the Visa, MasterCard, that would be 2 and a half to 3 and a
8 half percent. Payment solutions include dealing with refunds,
9 fraud detection, and a variety of other things. So there's
10 more going on in solutions.

11 **Q.** Now, you'll recall Table 1 in your report. That's where
12 you list the rates for Braintree, PayPal, et cetera; right,
13 sir?

14 **A.** Correct.

15 **Q.** Right. And that table is a description of the fee
16 structure for providers of payment processing services; right?

17 **A.** I would have to look exactly on the details of the table
18 to give you an accurate answer.

19 **Q.** If I could ask to turn to page 173 of your deposition.

20 **MR. MACH:** Obviously we'll wait, Your Honor, while you
21 have a moment.

22 **THE WITNESS:** Was that Volume 1 again? Sorry.

23 **BY MR. MACH:**

24 **Q.** Yes, sir.

25 **A.** Thank you.

TADELIS - CROSS / MACH

1 **THE COURT:** 173?

2 **MR. MACH:** Yes, Your Honor. 173, lines 10 to 12.

3 **THE COURT:** No. Next question.

4 **MR. MACH:** Thank you, Your Honor.

5 **THE COURT:** Let's just take our morning break and be
6 back a little bit after 10:45.

7 **THE CLERK:** All rise.

8 (Recess taken at 10:34 a.m)

9 (Proceedings resumed at 10:53 a.m)

10 (Proceedings were heard in the presence of the jury:)

11 **THE COURT:** Okay. Go ahead.

12 **MR. MACH:** Thank you, Your Honor.

13 **BY MR. MACH:**

14 **Q.** Welcome back, Professor.

15 **A.** Thank you, Mr. Mach.

16 **Q.** Phil, I'd ask you to put Slide 11 back up for us, please.

17 Professor Tadelis, you remember this is the slide that
18 shows processing for the most common in-app purchase? Do you
19 recall that?

20 **A.** Yes, I do.

21 **Q.** And we talked about the fact that a developer in your
22 preferred world could choose to use Braintree at 12.4 percent
23 instead of 15 percent. Do you recall that?

24 **A.** Yes.

25 **Q.** And I asked a question about the fact that that developer

1 couldn't use Braintree to distribute the product; right?

2 **A.** That is correct.

3 **Q.** And I think you pointed out, well, sure, that's true, but
4 Google will do this for free; right?

5 **A.** That Google would do the distribution for free, that's
6 correct.

7 **Q.** So now in that world that you're imagining, Google would
8 take the app, distribute the app, provide all of the other
9 services that they provide in connection with distributing the
10 app, but in the end they would receive nothing for that;
11 correct?

12 **A.** Let me make sure I understand correctly. Are you
13 suggesting that they would remove their fee? I'm just not
14 quite clear on what is the counterfactual.

15 **Q.** Sure. I'm imagining the world that I think you're asking
16 for, where Google doesn't require app developers to use
17 Google Play Billing to complete in-app transactions. Are you
18 with me?

19 **A.** Yes.

20 **Q.** And the world that you're imagining is one where Google
21 will distribute that app and provide all of the services
22 related to that, but before that transaction is complete, the
23 customer can go to Braintree and complete the transaction
24 there; right?

25 **A.** Correct.

TADELIS - CROSS / MACH

1 Q. And in that world, Google receives nothing for all of the
2 services it provides, like distribution; correct?

3 A. From this developer, that would be correct.

4 Q. I want to shift a little bit to ask you some questions
5 about the geographic market.

6 And just so that we're understanding, your view is that
7 the geographic is one big market across the whole world except
8 for China; right?

9 A. Correct.

10 Q. And obviously China is a very large economy and very
11 populous. We don't disagree on that; right?

12 A. Absolutely.

13 Q. And you also know that Apple sells a lot of iPhones in
14 China; right?

15 A. I don't know how many iPhones Apple sells in China
16 actually.

17 Q. And you exclude China because, among other things, you say
18 that the prominent payment solutions inside of China don't have
19 much overlap with those outside of China; right?

20 A. Among other things, yes.

21 Q. For example, you look at PayPal and Stripe and Square and
22 you find that only one of those has service in China; right?

23 A. I believe that to be correct.

24 Q. Now, once you exclude China, your market still includes
25 roughly 175 countries; fair?

TADELIS - CROSS / MACH

1 A. Sounds fair.

2 Q. So I want to take a minute and explore whether the reasons
3 that you excluded China apply equally to countries that you did
4 not exclude. Does that make sense?

5 A. Sure.

6 Q. So let's just take a country like Indonesia. What are the
7 prominent payment solution providers in Indonesia?

8 A. Sitting here right now, I have no recollection.

9 Q. So obviously, then, you couldn't tell the jury whether
10 those prominent payment solution providers overlap with the set
11 that serves customers outside of Indonesia; right?

12 A. Sitting here right now, I cannot do that.

13 Q. I assure you I'm not going to do 175 countries. I'll just
14 give you a couple of others.

15 Would it be the same answer if I gave you Egypt?

16 A. That would be the same answer.

17 Q. Or Brazil?

18 A. That would be the same answer.

19 Q. Or Germany?

20 A. That would be the same answer.

21 Q. Now, a moment ago we talked about the fact that those
22 payment solution providers that you do look at, like Stripe and
23 Square, only one does business outside of China. I want to
24 focus on that. Okay?

25 A. Sure.

TADELIS - CROSS / MACH

1 Q. You're aware, aren't you, sir, that Square is only
2 available in eight of the 175 countries, approximately, that
3 are in your geographic market?

4 A. That sounds right. I remember Square being exceptionally
5 small.

6 Q. So it's not available in China. It's also not available
7 in more than 150 other countries that are in your market;
8 right?

9 A. That's correct.

10 Q. Braintree, similarly, is also only available in eight
11 countries; right?

12 A. That number, I don't recall, but I take your word for it.

13 Q. You wouldn't be surprised to find that; right?

14 A. I would not be shocked to find that out.

15 Q. And the countries that we're talking about, we're not
16 talking about small countries; right? You know that Square is
17 not available in countries like Germany and Brazil and India?
18 You know that; right, sir?

19 A. Correct.

20 Q. The bottom line is, you couldn't tell the jury whether the
21 criteria you use to exclude China could be applied just as
22 equally to those countries; right?

23 A. Well, you talked about one of the criteria. The most
24 important criteria is that Google Play and Google Play Billing
25 are not offered in China. So the conduct of the tie that I am

TADELIS - CROSS / MACH

1 talking about here just doesn't exist in China, so excluding
2 China would be a natural thing to do.

3 **Q.** Now, what about pricing? Did you look at the degree to
4 which prices for the products that you compare Google Play
5 Billing against are the same across the world?

6 **A.** You mean the fees?

7 **Q.** Correct, sir.

8 **A.** No, I have not done a comparison of fees across every
9 country.

10 **Q.** So it wouldn't surprise you to know, for example, that
11 PayPal charges substantially higher fees outside of the
12 United States than it does in the United States; right?

13 **A.** I don't know the exact numbers, but it wouldn't surprise
14 me that they would be different.

15 **Q.** And it wouldn't surprise you to find that the fees that
16 they charge differ across the countries that are within your
17 geographic market; right?

18 **A.** That is correct, that would not surprise me.

19 **Q.** Now, you said in your direct examination that if we were
20 to narrow the geographic market only to the United States, that
21 that wouldn't affect your analysis; right?

22 **A.** That is correct.

23 **Q.** Now, I know that you don't view the world this way, but as
24 a percentage of smartphones, Apple has a vastly larger market
25 share in the U.S. than most other countries; right, sir?

TADELIS - CROSS / MACH

1 A. I -- yes, that is definitely correct.

2 Q. So if we were talking about Apple, which I know you don't
3 do, you don't believe Apple should be considered, if we were
4 thinking about Apple --

5 A. I'm not sure what I don't believe Apple should be
6 considered.

7 Q. I didn't mean to mischaracterize. I was trying to do
8 justice to your opinion.

9 A. Oh, thank you.

10 Q. I know that you don't think Apple is in the relevant
11 market. That's fair; right?

12 A. That is correct.

13 Q. Okay. But if it was, then looking at just the
14 United States, that would be material; right?

15 A. Are we talking about the market for in-app payment
16 solutions for digital content?

17 Q. I'm just saying if you don't limit things to Android and
18 you think about Apple, Apple's share is higher in the U.S. than
19 most other countries; right?

20 A. So I'm sorry, could you repeat the last question? Because
21 we kind of did a little switcheroo there.

22 Q. Yeah. I'm not trying to deceive.

23 If we're thinking about products outside of Android but in
24 things app distribution or in-app payment solutions, if you
25 were accounting for iOS and the related products, that that

TADELIS - CROSS / MACH

1 share would be considerably higher in the U.S. than most other
2 countries; right?

3 **A.** In the U.S., yes, that's correct.

4 **Q.** So let's turn to market shares for a minute.

5 You look at market shares as what you call indirect
6 evidence that Google has market power; right?

7 **A.** That's correct.

8 **Q.** But you don't have an accurate estimate of Google's market
9 share in the market as you define it; right?

10 **A.** In the market for in-app payments for digital -- in-app
11 payment solution for digital content, that's correct, I do not
12 have an accurate number.

13 **Q.** You conducted what you called a back-of-the-envelope
14 calculation. Does that sound familiar?

15 **A.** Yes, that does.

16 **Q.** Now, like other -- the other economists in this matter,
17 you're very well compensated for your work; correct, sir?

18 **A.** I am.

19 **Q.** \$1200 an hour plus a share of the revenue for the team
20 that supports you; right?

21 **A.** That is correct.

22 **Q.** You don't think that a case of this magnitude should be
23 decided on back-of-the-envelope calculations, do you, sir?

24 **A.** That is one of many pieces of evidence that are in my
25 reports.

TADELIS - CROSS / MACH

1 Q. And you know that beyond Google Play, there are many other
2 app stores that are available to Android users; right?

3 A. That is correct.

4 Q. And you know that some of those generate hundreds of
5 millions of dollars in revenue; right?

6 A. Yes, about a 50th, if I recall correctly, of what Google
7 actually --

8 Q. Well --

9 A. -- receives.

10 Q. I didn't mean to interrupt you. Are you finished?

11 A. I'm done.

12 Q. Now, in your report, you look at just two of those:
13 Samsung Galaxy and Amazon; correct?

14 A. That is correct.

15 Q. But you don't include estimates for market share for any
16 other app store; right?

17 A. No, I do not. That was not part of my assignment. The
18 distribution was handled by Professor Bernheim.

19 Q. Well, the estimates of the market shares that you provide
20 for billing services also don't account for those other app
21 stores other than your estimates for Samsung Galaxy and the
22 Amazon Appstore; correct?

23 A. That is correct.

24 Q. And your estimates of market shares also don't account for
25 sideloading; correct, sir?

TADELIS - CROSS / MACH

1 **A.** That is correct.

2 **Q.** And you didn't even analyze the question of whether
3 sideloading should be included in the market as you define it;
4 right?

5 **A.** I discuss in my report that for sideloading, I can't tell
6 how many apps are processing in-app digital content, so I can't
7 do a calculation of that.

8 **Q.** You don't know how many apps are sideloaded and you don't
9 know which payment processor was used for those sideloaded
10 apps; right?

11 **A.** An accurate number, no. What I do know is that over
12 80 percent, if I recall correctly, of apps are distributed
13 through the Google Play Store from Professor Bernheim's
14 analysis, and any app distributed through the Play Store must
15 use Google Play Billing.

16 So if we just think of the simple numbers of 80 through
17 the Google Play Store, 20 through everything else, and let's
18 just imagine that everything else is provided by other
19 suppliers and not by Google, then this 80 percent has to be
20 provided by Google because of the DDA agreement.

21 **Q.** Well, a minute ago you told me your assignment was not to
22 focus on the app distribution market; right?

23 **A.** Oh, I was talking about payment solutions at the moment.

24 **Q.** But you don't have an estimate of market shares
25 attributable to sideloading for payment solutions; right?

TADELIS - CROSS / MACH

1 A. That's correct.

2 Q. And market share is a number; right? It's a number like
3 80 percent, 20 percent, 45 percent; right?

4 A. That is correct.

5 Q. And you didn't attempt to quantify Google's market share
6 in that manner; right?

7 A. For payment solution, that's correct.

8 Q. And, for example, your assessment of market shares doesn't
9 include a discussion of the One Store; right?

10 A. That is correct.

11 Q. But you do know that One Store is an example of an app
12 store that has significant market share at least in some
13 geographies; right?

14 A. In some geographies, yes.

15 Q. You know that the One Store has 18 percent market share in
16 what you've called the South Korean market; right?

17 A. I don't recall that number off the top of my head, but
18 I'll take it.

19 Q. I can refresh your recollection if you'd like to turn to
20 Tab 2.

21 A. There's no need. I believe that.

22 Q. So you agree with me that One Store as an 18 percent
23 market share in what you call the South Korean market; correct?

24 A. If it's documented, then I believe you, yes.

25 Q. Let me turn for the last few minutes here to your

TADELIS - CROSS / MACH

1 conclusion that Google's conduct has anticompetitive effects.

2 Okay?

3 A. Sure.

4 Q. Now, you accept that Google has the right to charge for
5 whatever it wants to charge for; right?

6 A. Yes.

7 Q. Including distribution; right? Google has the right to
8 charge for that separately should it wish to do that?

9 A. That is correct.

10 Q. And you're familiar with the concept of what's called the
11 but-for world in antitrust; right, sir?

12 A. Yes, I am.

13 Q. The but-for world is the hypothetical world where Google
14 doesn't engage in the conduct that you find objectionable;
15 correct?

16 A. That is correct. That's the world where competition is
17 allowed for payment solutions.

18 Q. Now, in the current world, most app developers who
19 distribute through Google Play don't monetize in a way that
20 requires the use of Google Play Billing; right?

21 A. That's my understanding.

22 Q. But they still get to distribute that product at no cost;
23 correct?

24 A. Correct.

25 Q. And you know that in the but-for world where, you know,

TADELIS - CROSS / MACH

1 we're doing what you want done, Google might have to charge
2 fees for the other services that it doesn't charge for today;
3 right?

4 **A.** Or it might not.

5 **Q.** It might, it might not; right?

6 **A.** Right.

7 **Q.** It might?

8 **A.** And it might not.

9 **Q.** The relevant world, the relevant but-for world -- excuse
10 me -- that is one where the billing requirements that you
11 criticized are removed but then Google has the choice to set
12 fees for other parts of that platform; right?

13 **A.** That is correct.

14 **Q.** And it might do that as you said?

15 **A.** It might or might not.

16 **Q.** If it did that, the vast majority of developers would be
17 paying more than they do today; right, sir?

18 **A.** Not necessarily.

19 **Q.** Well, the vast majority of developers today don't pay
20 anything to distribute the product; right, sir?

21 **A.** To distribute, that's correct.

22 **Q.** Right. So the vast majority of developers, if they did
23 have to pay to distribute that product, they would be worse
24 off, wouldn't they, sir?

25 **A.** If they did have to pay, they would be worse off.

TADELIS - CROSS / MACH

1 Q. And you don't attempt to estimate the degree to which
2 prices for app distribution might increase; right?

3 A. That's right.

4 Q. You also don't attempt to estimate the degree to which
5 prices for payment processing that Google charges might
6 decrease in the but-for world; right?

7 A. That is correct.

8 Q. Now, I want to follow up on His Honor's question about the
9 effect of a lower service fee on consumers. Okay?

10 A. Sure.

11 Q. Now, you remember that Google lowered its service fee from
12 30 percent to 15 percent for many developers; right?

13 A. Yes.

14 Q. And you're aware that Google provided data showing how
15 many of the developers who fell into the new 15 percent bucket
16 lowered their prices for in-app purchases of digital goods;
17 right?

18 A. That sounds right. I don't recall the exact details of
19 the data that was provided on that.

20 Q. And you don't recall it because you didn't look at that
21 data to determine how many developers actually lowered their
22 prices to consumers when Google lowered the service fee to
23 those developers; correct?

24 A. Sitting here right now, I don't recall if I looked at that
25 data or not.

TADELIS - CROSS / MACH

1 Q. Well, I'm not asking you if you've seen the data, sir.
2 I'm asking if you actually conducted an analysis of that
3 question.

4 A. No, I have not conducted that analysis.

5 Q. Have you ever seen such an analysis?

6 A. Sitting here right now, I can't recall, but it's possible.

7 Q. It wouldn't surprise you, would it, sir, if very few of
8 those developers passed along that price decrease?

9 A. I wouldn't have a prior off which to base what I would
10 expect to happen. It also depends on how long things would be
11 allowed to shake up, so to speak, for them to adjust.

12 Q. So let me shift gears for a moment to the question of the
13 tie. You know what I'm talking about; right?

14 A. I hope so.

15 Q. Okay. Tying refers to an arrangement in which a seller
16 will sell a product, the tying product, to a buyer only if that
17 buyer agrees to purchase the seller's other product, the tied
18 product; right?

19 A. That would be a correct description, yes.

20 Q. And in this case, you say the tie product is distribution
21 through Google Play and --

22 A. Tying.

23 Q. Pardon me. You're faster than I am.

24 The tying product is distribution through Google Play and
25 the tied product is Google Play Billing; correct?

TADELIS - CROSS / MACH

1 A. Correct.

2 Q. So let's explore whether you really have those tied
3 together for the developers in our ecosystem. Okay?

4 A developer who distributes a free app, they don't have to
5 purchase Google Play Billing and they can still get
6 distribution through Google Play; correct?

7 A. That's correct.

8 Q. And the same goes for a developer who monetizes in a
9 consumption-only model; right?

10 A. Yep.

11 Q. They don't have to do that; right?

12 A. Correct.

13 Q. And the same goes for a developer who uses advertising;
14 right? They do not have to do that; correct?

15 A. Correct.

16 Q. So for each one of those developers, there is no
17 arrangement in which Google will sell the tying product only if
18 the buyer agrees to purchase the tied product; right?

19 A. That is correct.

20 Q. If you or I distributed an app, we could distribute it on
21 Google Play, and Google would not force us to use Google Play
22 Billing unless we made the particular choice to use a specific
23 business model; right?

24 A. That is correct.

25 Q. Now, you testified a little bit about your work for Amazon

TADELIS - CROSS / MACH

1 and eBay. Do you recall that?

2 A. Yes.

3 Q. And when you worked at eBay, you don't recall having any
4 concerns that they had policies or practices that were
5 anticompetitive; right?

6 A. That is correct.

7 Q. And much like Google Play, eBay earns its money on the
8 completion of the transaction and much less money on the
9 listing of the transaction; correct?

10 A. That's correct.

11 Q. And when you worked for eBay, eBay owned a payment
12 processor too; right? PayPal?

13 A. Yes.

14 Q. And when you worked at eBay, eBay didn't give users the
15 freedom to choose whichever payment processor they wanted to
16 when they completed transactions, did it?

17 A. That is correct.

18 Q. In fact, when you worked at eBay, eBay banned its
19 customers from using Google's payment processing product,
20 Google Checkout, even if users would have preferred that;
21 right?

22 A. That is correct.

23 Q. Now, your report also addresses antisteering provisions.
24 You remember that; right?

25 A. Yes.

TADELIS - CROSS / MACH

1 Q. And you can't think of any reason that might justify
2 Google's antisteering provision as you describe it; right?

3 A. Not for the conduct that I am investigating, that's
4 correct.

5 Q. But when you worked for eBay, eBay had an antisteering
6 policy; right?

7 A. That is correct.

8 Q. And eBay had an antisteering policy because if it didn't
9 have such a policy, users of the platform could take advantage
10 of the parts of the platform that were free or low cost and
11 then they could remove the transaction from the platform and
12 deprive eBay of the income it wanted to earn from its services;
13 right?

14 A. That is correct.

15 Q. And that antisteering policy, that's what allowed eBay to
16 actually pay for the platform; right?

17 A. And make a profit, yes.

18 Q. Nothing wrong with eBay doing that; right?

19 A. That is correct.

20 Q. And, again, when you worked at Amazon, you didn't think
21 there was anything anticompetitive about what Amazon was doing
22 either; right?

23 A. That is correct.

24 Q. And Amazon doesn't just sell its own product. It's also a
25 platform that brings buyers and sellers together; right?

TADELIS - CROSS / MACH

1 A. Yes. More than 50 percent now, in fact.

2 Q. And they also have an antisteering policy; right?

3 A. Yes, that's correct.

4 Q. For example, on Amazon a seller can't provide a link or a
5 message that prompts a user to go to an external website to
6 complete a transaction; right?

7 A. That is correct.

8 Q. And obviously they have to do that because if a user could
9 take advantage of the platform to connect the buyer and the
10 seller but then take that transaction another place, eBay won't
11 get money for the services it's providing; right?

12 A. Yes.

13 Q. And you testified that you think Amazon's policy is fair
14 but Google's policy is not fair because you think Amazon treats
15 all customers exactly the same way. Do you recall that?

16 A. I recall that we had that discussion in our deposition,
17 yes.

18 Q. We had that discussion, and what you said in that
19 discussion is that that's what was fair, Amazon treats all
20 sellers the exact same way; right, sir?

21 A. That was one of the many things that I mentioned, yes.

22 Q. And, in fact, for some products, Amazon charges
23 45 percent; right?

24 A. That's correct.

25 Q. For other products, Amazon charges 8 percent; right, sir?

TADELIS - CROSS / MACH

1 A. That's correct.

2 Q. So, in fact, Amazon targets certain types of sellers for
3 high fees and others for low fees; right?

4 A. Yes, they do.

5 Q. And some of those fees obviously are higher than Google's?

6 A. That's correct.

7 Q. And it's not wrong for Amazon to want to avoid the result
8 of a user using the pieces of the platform they like but then
9 moving over and avoiding the parts of the platform they have to
10 pay for; right?

11 A. Could you kindly repeat the question, sir?

12 Q. Sure.

13 There's nothing unfair or wrong about Amazon wanting to
14 prevent a situation where users of the platform use the pieces
15 that they like but leave the platform when they're asked to pay
16 for it; right?

17 A. There's something at the end that just throws me off. I'm
18 sorry.

19 Q. We've done so much, I'll move on. We've got more to do.

20 A. Okay.

21 Q. It's not a problem.

22 A. Thank you.

23 Q. Last question about Amazon.

24 Sellers on Amazon also don't have the power to choose the
25 payment processor they like; right?

TADELIS - CROSS / MACH

1 A. Correct.

2 Q. And if they did give sellers that option, Amazon would
3 have a hard time making money on the platform; right?

4 A. That wouldn't be an option that would work well for the
5 way Amazon is charging. What Amazon is like, is like the
6 purchasing of apps on the Play Store. The interactions on
7 Amazon have no parallel to in-app purchases that happen between
8 the buyer and the app developer.

9 Q. Counsel for Epic is welcome to ask more questions about
10 that if they'd like to explore it, sir.

11 A. Sure.

12 Q. Now, let me close with a couple of questions about Apple.
13 Apple offers payment solution services like Google does;
14 right?

15 A. That's correct.

16 Q. But you concluded that using their product is not a viable
17 substitute for developers; right, sir?

18 A. That's correct.

19 Q. But in order for two products to be substitutes, they
20 don't have to be viable substitutes for every consumer in the
21 market; right?

22 A. That's correct.

23 Q. And you're aware that there certainly are developers who
24 develop for iOS but they don't develop for Android; right?

25 A. I understand that that occurs, yes.

TADELIS - CROSS / MACH

1 Q. And when a developer makes that choice, they develop for
2 iOS but don't develop for Android, Google is losing not just
3 the app in Google Play, they're also losing any potential
4 revenue they might get through Google Play Billing in that app
5 too; right?

6 A. Not necessarily.

7 Q. Well, if the app -- is your testimony that an app listed
8 on iOS generates revenue for Google through Google Play
9 Billing?

10 A. No, that's not my testimony.

11 Q. Now, you also know that there are lots of apps that
12 launched on iOS before they launched on Android; right?

13 A. Yes.

14 Q. You know Instagram did that?

15 A. I don't recall who did it, but I know it's related to the
16 sim ship agreement or something like that.

17 Q. But you know it happens; right, sir?

18 A. I know it happened, yes.

19 Q. And in those instances, the developers had a choice of
20 whether to develop for Android first or iOS first; right?

21 A. I would assume that much, yeah.

22 Q. Now, in your report you discuss some of the price changes
23 that Google put in place in January of 2018. Do you recall
24 that?

25 A. I believe that's the date, yes.

TADELIS - REDIRECT / EVEN

1 Q. Those were price reductions; right, sir?

2 A. Yeah. That's when they moved to the 15 percent on the
3 first million, if I recall correctly.

4 Q. Is that how you recall it, sir?

5 A. That's how I recall it, but --

6 Q. Me too, but I'm not the witness, sir.

7 A. -- there's a lot of information in this case.

8 Q. And it's clear that when Google did that price reduction,
9 they were taking into account the changes in Apple's prices for
10 its own payment processing service when deciding to -- whether
11 to make price changes of their own; right, sir?

12 A. I believe reading that somewhere, yes.

13 Q. Well, actually you said that; right, sir?

14 A. Yes. I believe that I also wrote that because it's part
15 of the information I obtained.

16 MR. MACH: No further questions. Thank you, sir.

17 THE COURT: Okay. Very, very briefly.

18 MR. EVEN: I will do my best, Your Honor.

19 THE COURT: I'm going to help you. Very, very
20 briefly.

21 **REDIRECT EXAMINATION**

22 **BY MR. EVEN:**

23 Q. You recall the time difference between when Apple moved
24 its pricing to 15 percent --

25 A. Yes.

TADELIS - REDIRECT / EVEN

1 Q. -- and when Google moved its pricing to 15 percent?

2 A. Apple dropped its prices around the middle of 2016, about
3 a year and a half before Google's response.

4 Q. There was some question about Amazon and eBay. You
5 started explaining why the policy on Amazon and eBay is
6 different from the policy that you were talking about here.
7 Can you explain that?

8 A. Sure. So if you want to have an analogy between, say,
9 Amazon and the Google Play Store, the analogy should only be
10 about the sale of the app itself. Because if I'm a seller and
11 I sell these kind of microphones and I want to sell them
12 through Amazon, I sell them through Amazon, the transaction
13 happens on Amazon, amazon is performing the bill of sale or
14 whatever that is, and then they pay me.

15 If later after you bought this Shure microphone from me,
16 you will contact me and say, "Oh, I want to buy some
17 accessories that will allow me to lengthen or shorten it," you
18 could do that directly with me. Amazon doesn't prevent this.
19 You can't buy in-app content on Google Play without Google Play
20 Billing. They do prevent it.

21 Q. You were asked some questions about the -- well, what's
22 called -- what is referred to by counsel as the apples and
23 oranges, and the fact that Google currently charges a price for
24 the bundle. If the tie were severed, would Google be charging
25 a price for the bundle?

TADELIS - REDIRECT / EVEN

1 **A.** Well, again, I don't know how Google will respond to the
2 tie that's severed; but if they want to offer payment
3 solutions, they will have to compete with the payment solution
4 providers.

5 **Q.** Now, there was some questioning about whether Google would
6 in response try to impose a fee on distribution, for instance.

7 If Google thought that charging developers who currently
8 do not pay anything a distribution fee is something that's
9 profitable for Google, is there anything stopping Google from
10 doing that today before there's any change to the other
11 policies?

12 **A.** Absolutely not, because, again, they currently have the
13 market power in distribution and, therefore, if currently it
14 would be in their best interest to charge for distribution and
15 make money, they would do it. The fact that they're not doing
16 it now may suggest that that's not the right business model.

17 **Q.** Okay. I want to go back to a couple of questions you were
18 asked about whether there's actually a tie or not.

19 You presented today to the jury a slide with Nike being
20 the only game in town and tying socks. Do you remember that?

21 **A.** Yes.

22 **Q.** If Nike was the only game in town for all sneakers but it
23 chose to tie the socks only to running shoes but not to cleats,
24 would that mean there's no tie?

25 **A.** No. There would be a tie with running shoes.

TADELIS - REDIRECT / EVEN

1 Q. So now let's put up Slide 11 for a second.

2 Do you remember that Mr. Mach asked you a few questions
3 about this slide and he took out all the 30 percent that Google
4 charges and left only the 15 percent because that is apparently
5 the price that 99 percent of developers pay; correct?

6 A. Yes.

7 Q. How much of the actual revenue is generated by the people
8 who pay 15 percent?

9 A. A small fraction of the revenue.

10 Q. Now, you say at the top 4.99 is the most common in-app
11 purchase price. Is 4.99 the most common in-app purchase price
12 for the people who sell only at 15 percent or for everyone?

13 A. For everyone.

14 Q. So this comparison is apples to oranges; correct?

15 A. Absolutely.

16 Q. Last question. Mr. Mach showed you these very high bar
17 charts about how much a Stripe or a Square might charge under
18 their current schedule for microtransactions. Do you remember
19 that?

20 A. Yes.

21 Q. Microtransactions are typically digital goods; correct?

22 A. That is correct.

23 Q. Does a Square have any incentive to develop a pricing
24 schedule for microtransactions while there is a tie in place
25 that doesn't allow it to provide microtransactions for digital

1 goods?

2 **A.** Absolutely no incentive.

3 **MR. EVEN:** No further questions, Your Honor.

4 **THE COURT:** Okay. You may step down. Careful on your
5 way down.

6 **THE WITNESS:** Thank you, Your Honor.

7 (Witness excused.)

8 **THE COURT:** Who do we have next?

9 **MR. RAPHAEL:** Google calls Professor Matthew Gentzkow,
10 Your Honor.

11 **THE COURT:** Okay. Let's take all these binders down,
12 please, from the prior witness.

13 **THE CLERK:** Please raise your right hand.

14 **MATTHEW GENTZKOW,**
15 called as a witness for the Defendant, having been duly sworn,
16 testified as follows:

17 **THE WITNESS:** Yes, I do.

18 **THE CLERK:** Thank you. Please be seated.

19 Please state your full name for the Court and spell your
20 last name.

21 **THE WITNESS:** My name is Matthew Gentzkow,
22 G-E-N-T-Z-K-O-W.

23 **THE CLERK:** Thank you.

24 **MR. RAPHAEL:** May I proceed, Your Honor?

25 **THE COURT:** Yes.

GENTZKOW - DIRECT / RAPHAEL

1 **MR. RAPHAEL:** Before I do so, the parties have agreed
2 upon the admission of a number of exhibits, and I'll read out
3 the numbers on those.

4 **THE COURT:** Okay.

5 **MR. RAPHAEL:** 6989, 6991.

6 **THE CLERK:** Wait a minute. 6989?

7 **MR. RAPHAEL:** 6991, 6993, 6994, 7011, 7020, 7028,
8 7031, 7073, 7079, 7089, 7090, 7095, 7102, 7114, 7115, 7178,
9 7179, and 9708.

10 **MR. EVEN:** No objection, Your Honor.

11 **THE COURT:** Okay. They're admitted.
12 (Trial Exhibits 6989, 6991, 6993, 6994, 7011, 7020,
13 7028, 7031, 7073, 7079, 7089, 7090, 7095, 7102, 7114,
14 7115, 7178, 7179, and 9708 received in evidence.)

15 **MR. RAPHAEL:** Thank you, Your Honor.

16 **DIRECT EXAMINATION**

17 **BY MR. RAPHAEL:**

18 **Q.** Good morning, Professor Gentzkow.

19 **A.** Good morning.

20 **Q.** Where do you work?

21 **A.** I work at Stanford University.

22 **Q.** And what is your title at Stanford?

23 **A.** I'm the Landau Professor of Technology and the Economy.

24 **Q.** And you are Dr. Gentzkow; correct?

25 **A.** That's right, yep.

1 Q. Where did you get your Ph.D.?

2 A. At Harvard University.

3 Q. And what did you get your Ph.D. in?

4 A. Economics.

5 Q. What did you do after getting your Ph.D. in economics from
6 Harvard?

7 A. I went to the University of Chicago in the business school
8 there where I was a professor of economics.

9 Q. And did you come to Stanford after the University of
10 Chicago?

11 A. I did. I moved in 2015 from there to Stanford.

12 Q. What is the focus of your current research as an economics
13 professor at Stanford?

14 A. Yes, and my main field is industrial organization, which I
15 think you've heard several times about. Sort of a fancy word
16 for the study of competition of companies in markets. And the
17 main focus of my research has been media and also digital
18 markets.

19 Q. And have you published any articles in any professional
20 economics journals?

21 A. I have. I've published many articles. I published in all
22 of the top journals in economics, as well as journals like
23 *Science and Nature* and others.

24 Q. Have you won any awards or prizes for your work as an
25 economist?

1 **A.** I have, yes. I was recently elected to the National
2 Academy of Sciences. I'm a fellow of the American Academy of
3 Arts and Sciences and the Econometric Society, and I've won a
4 variety of other awards and prizes including something called
5 the John Bates Clark Medal.

6 **Q.** And what is the Clark Medal?

7 **A.** The Clark Medal is given by the American Economic
8 Association to the American economist under the age of 40 who's
9 made the most significant contribution to economic thought and
10 knowledge.

11 **MR. RAPHAEL:** At this time, Your Honor, we would
12 qualify Professor Gentzkow as an expert in economics and
13 industrial organization.

14 **MR. EVEN:** No objection.

15 **THE COURT:** He is qualified.

16 **MR. RAPHAEL:** Ms. Clark, could we have control?

17 Thank you very much.

18 **BY MR. RAPHAEL:**

19 **Q.** Now, just, Professor Gentzkow, given all that experience,
20 were you compensated for your work in this matter?

21 **A.** I was, yes.

22 **Q.** And at what rate?

23 **A.** At a thousand dollars per hour, as well as a share of the
24 billings of Analysis Group, the economic consulting company
25 that I worked with.

1 Q. And did you prepare a set of slides that we have on the
2 screen for your testimony today?

3 A. I did, yes.

4 Q. What was your assignment in this case?

5 A. Yeah, so my assignment was to evaluate the challenged
6 conduct, the conduct of Google's that we've been talking about
7 in this case; to assess its impact on competition, on
8 consumers, and in particular whether it constitutes
9 anticompetitive -- what we call in economics anticompetitive
10 exclusion or foreclosure.

11 Q. And what questions did you try to answer in carrying out
12 that assignment?

13 A. Yes. So there are two questions that are here on the
14 slide. I think the kind of key starting point for all of this
15 from the perspective of an economist is -- what we care
16 ultimately about is: How is all of this impacting consumers?
17 I think that's something that Dr. Bernheim and I, for example,
18 agree about.

19 And so the key questions I wanted to look at were: First,
20 did this conduct create value for consumers? What were the
21 potential benefits of it to consumers? And then did it block
22 competition in a way that might have destroyed value for
23 consumers?

24 And just to be really clear, when I say "block
25 competition" here, I think there have been a few words used for

1 that concept: Foreclosure --

2 **THE COURT:** Okay. Let's wait for the questions.

3 **THE WITNESS:** Okay.

4 **THE COURT:** Go ahead.

5 **BY MR. RAPHAEL:**

6 **Q.** Sure. Could you just explain the nature of that second
7 question that you looked at for your assignment?

8 **A.** Yeah. So I just meant to clarify just, when I say "block
9 competition," I don't mean that competition has to be blocked
10 entirely, but is it impaired or limited in some way that means
11 the net effect of all the conduct could be to destroy value for
12 consumers.

13 **Q.** And what kinds of things does an economist do to try to
14 answer those questions you've described?

15 **A.** So do a number of different things, but I would call out
16 kind of two of them that are maybe the center.

17 The first is applying economic principles and models and
18 literature that we've studied in other settings to this setting
19 to try to understand it.

20 And the other one is to look at data and do statistical
21 analysis to try to understand specifically what's happening
22 right here.

23 **Q.** And you mention data. What kind of data did you look at
24 in carrying out your assignment?

25 **A.** Yeah, so I had access to quite a lot of data from Google

1 in this case, from Epic, as well as from third-party sources.
2 I think hundreds of millions of observations in that data all
3 together.

4 **Q.** And in reviewing all that information, did you write a
5 report?

6 **A.** I did, yes.

7 **Q.** And what conclusions did you reach after conducting the
8 analysis that you describe?

9 **A.** Yeah, so the main conclusion, bottom line is that I think
10 the conduct that we're talking about here clearly does create
11 value for consumers, and it does not block competition in the
12 way that I described.

13 **Q.** Now, in reaching those conclusions, did you analyze
14 Google's conduct as a whole or just piece by piece?

15 **A.** I would say I did both. I considered it comprehensively
16 as a whole and what was the overall total impact of this
17 conduct putting it all together.

18 I also think it's really important to drill down and look
19 at the details of each piece of this and understand really
20 what's going on, so I tried to do that too.

21 **Q.** Now, we've been using terms like "competition" or
22 "blocking" or "foreclosing" competition. How do economists
23 distinguish between those two concepts?

24 **A.** Yeah. So I think there's an example, just to try to make
25 this concrete, that I think might be helpful. So imagine that

1 we see three different companies competing in a market. I have
2 here just like Company 1, 2, 3. And suppose we see one of
3 those companies, like Number 2, is really succeeding in the
4 market, like it's attracting a large share of consumers, a
5 large share of consumers are coming to it.

6 The key thing we need to distinguish is: Why is that
7 happening? One possibility is that the reason it's happening
8 is because Company 2 is offering those consumers a lot of
9 value. It's offering them a better deal than its competitors.
10 That would be competition.

11 Or the other possibility would be that somehow Company 2
12 has blocked the ability of Companies 1 and 3 to offer its deals
13 to consumers or those consumers' ability to access those deals.

14 And so at a high level, those are the two things we're
15 trying to separate here.

16 **Q.** Just to tie that off, if in our example here if Company 2
17 is doing better than the other companies, does that tell you,
18 as an economist, that there's some problem with competition?

19 **A.** No, not at all, because it could follow just from them
20 offering a better deal.

21 **Q.** And so if the Google Play Store is doing better than the
22 Samsung store or the Amazon Appstore, does that mean that
23 there's some competition problem in the market?

24 **A.** No, it does not.

25 **Q.** Now, if Company 2 is getting more customers, you mentioned

1 they might be offering a better deal, what sort of things might
2 that entail?

3 **A.** Yeah, so it could be most simply offering lower prices.
4 It could be higher quality, better customer service. If we
5 were talking about stores here, it could be that it has a
6 bigger store, like this is maybe a supermarket and these other
7 companies are, like, little convenience stores. It would not
8 be at all surprising if you have a big store with a Target or
9 Walmart with all kinds of products, lots of consumers would be
10 going to that store.

11 **Q.** So is competition just about price for economists?

12 **A.** No. It's about all those other dimensions I just
13 mentioned.

14 **Q.** Now, in this example here we're looking at people. For an
15 economist, are consumers always people?

16 **A.** No. There are lots of settings where consumers means
17 other companies that one company is doing business with in one
18 way or another.

19 **Q.** And who are the relevant consumers in this case for
20 purposes of your analysis?

21 **A.** Yeah, so this case is obviously a little bit trickier than
22 this simple example. I think the key thing about this case is
23 that Google's Android and also the Play Store within it are
24 platforms; and as platforms, they bring together different
25 participants and all of those are consumers. So that includes

1 users. It includes app developers. It includes device makers,
2 cellular carriers. All of those different participants are
3 consumers in this market.

4 **Q.** And when analyzing the effect of the conduct, does an
5 economist have to look at both sets of those consumers?

6 **A.** Yeah. I would say all of them and, in particular, I think
7 maybe when you say "both," the main ones being the users and
8 the app developers. I think that's where there's a lot of
9 focus certainly if we're talking about the Play Store.

10 **Q.** And what are the signs of competition for users, for
11 example?

12 **A.** I think competition for users looks like going out and
13 trying to give those users a better deal, make better phones
14 with better apps, and better app store. All of those different
15 kind of features that are going to make that phone deliver more
16 value to the users.

17 **Q.** And what are the signs of competition that you would
18 expect for developers and manufacturers?

19 **A.** Yeah, so if you think about Google trying to attract
20 developers to its store or device makers to the Android
21 platform, it's going to try to give them a better deal.

22 How does it do that? It could be giving various
23 incentives or rebates or discounts or revenue sharing, things
24 that make the profitability or attractiveness of investing in
25 their platform bigger from the point of view of those other

1 consumers.

2 Q. So you mentioned incentives. Did you hear Dr. Bernheim's
3 testimony about incentives?

4 A. I did hear -- I guess I would say I heard him mention
5 incentives at several points in his testimony.

6 Q. Do economists consider incentives to be anticompetitive?

7 A. No. I think -- I think the key point is that, broadly
8 speaking, competition very often involves trying to give
9 incentives to those consumers to choose your product.

10 So if we're giving incentives to device makers or to app
11 developers and the purpose of those incentives is to make it
12 more attractive for them to choose Google Play or to develop
13 really great phones for Android, that is precisely what
14 competition means.

15 Q. And are those sorts of incentive payments unusual in the
16 economy?

17 A. No. There are lots and lots of firms that compete by
18 giving incentives in that way.

19 Q. Now, in the course of your analysis, did you look at what
20 choices users and developers have with the iPhone?

21 A. I did, yeah. So I guess I think of this as sort of a
22 reference point. Like, one of the core questions that
23 Dr. Bernheim talked about that we're wrestling with here is:
24 Has this conduct blocked or foreclosed ways that app developers
25 can reach users? That's kind of the heart of this whole thing

1 in a lot of ways.

2 And I think a useful just reference point is if we ask
3 that question about Apple's platform, it's sort of true. On
4 Apple's platform, there really is just one way that an app
5 developer can connect and share their app with a user. That's
6 their app store.

7 **Q.** And how does the situation compare on Android?

8 **A.** Yeah. So as I'm sure you've heard a fair bit about
9 already, on the Android platform it looks very different.
10 Instead of there being just one way for them to reach users,
11 there are a bunch of them, including preinstallation by OEMs,
12 other app stores like a Samsung Galaxy Store, direct
13 downloading, sideloading from websites, and of course the
14 Google Play Store as well.

15 **Q.** Did you analyze whether Google's conduct prevented other
16 app stores from getting on to Android phones?

17 **A.** I did, yes.

18 **Q.** And what evidence did you look at in conducting that
19 analysis?

20 **A.** Yeah. So among all of that data that I was talking about,
21 one particular kind of data that I had access to has, for all
22 of the Android phones all over the world, which ones of them or
23 what share of them come out of the box with at least one other
24 app store besides Google Play preinstalled on the phone.

25 **Q.** And is that the data that we're looking at on this slide

1 here?

2 **A.** Yeah. So this slide here shows the results of that
3 analysis. These green bars are the share of Android devices in
4 each of these years, or at each of these dates, that had
5 another app store preinstalled.

6 **Q.** And what did you find in these data?

7 **A.** Yeah, so I guess if we look, you can see it's going up
8 over time; and if you look at, say, 2021 on the right-hand
9 side, about two-thirds of all Android devices as of that year
10 come with at least one other app store besides Google Play
11 preinstalled right there on the phone.

12 **Q.** And did you look at similar data for the United States?

13 **A.** I did, yes.

14 **Q.** And what did you find in those data?

15 **A.** Yeah, I think it looks pretty similar. So here's the plot
16 for the United States, and you can see in 2021 68 percent of
17 all the phones come with at least one other app store
18 preinstalled.

19 **Q.** So why did you include these data that you just mentioned
20 with the green bars, why did you include that in your analysis?

21 **A.** Because I guess, as we were talking about, the key
22 question here is: Have these other channels been blocked? And
23 so if we're talking about other app stores in particular, are
24 other app stores prevented from reaching users? This is one
25 piece of evidence, not the only one, that shows very directly

1 for many, many users they have those other app stores already
2 right there on their phone.

3 Q. And just as a reminder, what percentage of iPhones come
4 with an alternative app store preloaded?

5 A. Zero.

6 Q. And did you look at data on whether consumers actually get
7 apps through other app stores or other channels outside of
8 Google Play?

9 A. I did, yes.

10 Q. And did you find any data that spoke to that?

11 A. Yeah. So I guess that's what's shown here. So separate
12 data from the one that I was just talking about let's me look
13 at each -- the count of installations of apps that happen
14 outside of Google Play through all of those other channels. So
15 sideloading and other app stores and so on.

16 As of May 2021, each month 3.2 billion apps are installed
17 that way. And in the United States, you can see as of
18 May 2021, 190, roughly, million apps are installed that way --
19 or app -- I should say app installations happen each month.

20 Q. Now, I see on the slide here you have some percentages and
21 some arrows going upward. Why did you include those?

22 A. So those arrows just refer to how did this change from
23 July 2019 to May 2021; and I think what you see there is it
24 went up by a lot, by 58 percent worldwide, 88 percent in the
25 U.S. And that's, I think, significant here because a lot of

1 the conduct that we're talking about in this case, or at least
2 some of it -- Project Hug, RSA 3.0s -- those things happened in
3 2019. So we might ask: After Google did these things, did
4 that lead to the use of these other channels going down? This
5 shows that, in fact, it went up over that period.

6 **Q.** Now, do you recall Dr. Bernheim saying that this roughly
7 3 billion number was the wrong one to use?

8 **A.** Yes, I do. I think he said that we should focus on the
9 share instead.

10 **Q.** Do you agree with that?

11 **A.** I guess what I would say is, not in this context because
12 it depends what question we're asking. I think it's absolutely
13 true that the number of these kinds of installations that
14 happen through Google Play each month is quite a lot bigger
15 than 3.2 billion. That's clear.

16 What I'm asking here is not what share did those things
17 have but, rather, has this channel been blocked or do users
18 find themselves unable to use it.

19 And I think just if you think about the sideloading
20 warnings and all these different things we've been talking
21 about, this -- the level of the number, 3.2 billion, just shows
22 directly there are lots and lots of people every month who go
23 out and manage to do this on their Android phones lots and lots
24 of times.

25 **Q.** Now, I think you mentioned that share data that

1 Dr. Bernheim mentioned. I want to show you a chart that he
2 used.

3 Do you recall seeing this?

4 **A.** Yes, I do, one of the charts to show to summarize the fact
5 that Google Play has this, roughly, 80 percent share of
6 downloads.

7 **Q.** Does this chart and the data it shows tell you one way or
8 the other whether Google has done something to harm
9 competition?

10 **A.** No, it doesn't, for exactly the reason we were talking
11 about at the beginning with Company 1, and Company 2, and
12 Company 3. The question is not whether a lot of consumers are
13 choosing Google Play; the question is whether they're doing
14 that because it delivers them more value. Or is it that
15 they're doing that because for some reason their ability to
16 transact in other places has been blocked or impaired.

17 **Q.** Now, you mentioned two possible explanations there. Did
18 you investigate which one fits the economic evidence?

19 **A.** I did, yes.

20 **Q.** And how did you go about doing that?

21 **A.** I did a number of things, but one I think is informative
22 is to zero in on those cases we were talking about just before
23 where users have multiple app stores preinstalled right there
24 on their phone.

25 So I think the Samsung Galaxy phones are not the only

1 example of this but one example of this. You can see on this
2 slide, this is just what a Samsung phone looks like when you
3 take it out of the box, or at least one example of that. Those
4 phones have the Samsung Galaxy Store preinstalled on the home
5 screen right next to the Play Store.

6 So at least in this instance, if we're trying to
7 understand why are consumers choosing the Play Store more than
8 the Samsung Galaxy Store, at least in this instance, we know
9 those consumers have a free choice. They're both right there
10 on their phone. They're both one click away.

11 None of the conduct that we're talking about here is
12 preventing me at that point as a Samsung Galaxy user from
13 picking one or picking the other. So this seemed like a good
14 kind of case to consider.

15 **Q.** And what percentage of phones, Android phones, around the
16 world are made by Samsung and give consumers that choice you
17 mentioned?

18 **A.** Yeah, well, I think those two things are actually
19 different. The share that are made by Samsung is very large.
20 Samsung is the biggest Android device maker. They have about
21 1.1 billion devices or 40 percent worldwide of all devices,
22 100 million in the U.S., 57 percent.

23 I think the share who offer this kind of choice is even
24 bigger because there are other phones besides Samsung that also
25 offer other app stores that are preinstalled side by side with

1 the Play Store.

2 **Q.** So focusing just on those 1.1 billion Samsung devices, did
3 you have any data that told you how often users that have that
4 choice, which app store they actually use?

5 **A.** Yeah. I think -- I mean, even yesterday we saw some
6 evidence that might give you a hint of this. The truth is that
7 when consumers have those side by side, they -- a very large
8 share of them opt to choose the Google Play Store. One example
9 of that data discovers 2017 to 2019. If we look at of Samsung
10 users, what share of them each month choose to go to the
11 Play Store and what share of them each month choose to go to
12 the Galaxy Store, those numbers are like 83 percent compared to
13 19 percent.

14 **Q.** Now, did you investigate whether it's the case that the
15 reason for those numbers is just that people haven't tried the
16 Galaxy Store?

17 **A.** I did, yes. There's some survey data that speaks to that
18 directly. So this was like a survey of users of the
19 Samsung Galaxy phone where they were asked whether they had
20 tried the Samsung Galaxy Store, or used it at least once, and
21 65 percent say they have used it. So at least for that large
22 share, not only is it right there, but they've actually gone
23 into the store and looked around and seen what it's like, and
24 they're still choosing Google Play at a very high rate.

25 **Q.** Now, you've been talking about Samsung, and I think you

1 mentioned there's some other phones out there that maybe offer
2 a similar choice. Did you look at similar data regarding other
3 app stores?

4 **A.** Yeah. I looked at a couple -- or I looked at, I guess,
5 all the ones where I was able to identify data. Two of those
6 are the Amazon Appstore and the One Store. One Store I think
7 was mentioned is a big app store in Korea particularly.

8 So looking at people who have the Amazon Appstore, how
9 often do they choose that, the rate at which they do is only
10 about 3 percent of the rate at which users choose the Google
11 Play Store; and for the One Store, that number is 4 percent.
12 So still, again, just like the Samsung case, much, much lower.
13 When people have a choice, they're overwhelmingly choosing
14 Play.

15 **Q.** Did you investigate why consumers are making choices that
16 we're observing here where they choose the Google Play Store
17 more than the other app stores?

18 **A.** Yes, I did. I think you could basically step back and
19 think: I don't know, if I have a choice between two app
20 stores, what are the factors that I'm going to consider? Why
21 might I be choosing one much more than the other?

22 **Q.** And was the number of apps in each app store a factor that
23 you considered?

24 **A.** Yeah. So that seems like the most obvious factor; if
25 you're choosing an app store, you're looking for apps. And a

1 really natural explanation here is the simple fact that I think
2 you've already heard something about, that the Google Play
3 Store has something like 3.3 million apps in it, and these
4 competing app stores have far smaller numbers: Samsung 191,000
5 roughly and Amazon at this point in time 476,000.

6 **Q.** Now, I know you have a Ph.D. in economics, but I want to
7 ask you a simple question.

8 If you have more apps in a store, would you expect that
9 there would be a lot more downloads for that store?

10 **A.** Yes.

11 **Q.** Now, did you hear Dr. Bernheim testify that there was
12 something odd about Samsung having so few apps?

13 **A.** I think he did use that word. Yeah, I think he was
14 talking -- noting the fact that many other app stores have more
15 apps than the Samsung Galaxy Store and sort of wondering why
16 that might be.

17 **Q.** And do you agree with him that there's something odd about
18 that?

19 **A.** I don't find this odd. I think there are a number of
20 reasons why Samsung might have fewer apps than Amazon. One
21 that I think is consistent with the evidence I've seen is
22 Samsung was particularly pursuing a strategy focusing on games
23 and trying to get a lot of big games into its app store. That
24 Epic Fortnite app is an example of that. They attracted
25 Fortnite to their store. So if you're a kind of a boutiqueish

1 store focusing especially on games, that's one reason why you
2 might have fewer apps than another store that's trying to be a
3 broader kind of app store.

4 **Q.** Now, do you agree with Dr. Bernheim's testimony that
5 Samsung wasn't interested in competing?

6 **A.** No, I don't agree with that testimony. I think, I guess,
7 a couple of things I would say about that. One is -- I guess
8 broadly what I would say is the economic data that I have seen
9 is not consistent with that.

10 So, number one, there are examples of Samsung doing what
11 it looks like to me competing pretty hard. For example, as I
12 said, they attracted the Fortnite app. When Fortnite was
13 launched, it was the exclusive place you could get it was the
14 Samsung Galaxy Store. And as you said, Fortnite at the time
15 was the biggest game in the world by some descriptions.

16 I think Dr. Bernheim said trying to attract big games as
17 an exclusive is one of the key ways that an app store might
18 compete, so it looked like they were doing that and trying
19 pretty hard.

20 And then the second piece I think of the answer to your
21 question is there was some suggestion -- there were these
22 discussions around Project Banyan and some discussion of
23 revenue sharing agreements with Google and Samsung. The
24 economic evidence I've seen also does not look consistent to me
25 with Samsung somehow ceasing to compete after those things

1 happened.

2 **Q.** And is some of the data that Dr. Bernheim showed a part of
3 that economic evidence?

4 **A.** Yeah, I think that's an example. This is the figure that
5 Dr. Bernheim showed yesterday with just the share of downloads
6 that these different app stores are accounting for.

7 If you kind of zoom in and look, Samsung is the gray one
8 there kind of in the middle.

9 And so if you look at what happened to Samsung's share of
10 those downloads across this period, remember, some of these
11 discussions and things that we were talking about happened in
12 the middle of -- earlier this period, its share continued to
13 increase.

14 And I've actually looked at the data that underlies this
15 chart. The number of downloads through the Samsung
16 Galaxy Store from the beginning to the end of this period
17 didn't go down; it actually tripled. It went from about
18 50 million to 150 million.

19 **Q.** Now, this difference between the number of apps and the
20 different app stores, is it new that Google Play has a lot
21 more?

22 **A.** No, absolutely not. Google Play has, I think, succeeded
23 early on in competing to attract a lot of apps. So this is an
24 example of some date from 2011. So you can see way back in
25 2011, Google Play had 150,000 apps; the Amazon Appstore had

1 only 5,000. If you looked at other competing app stores at
2 that point in time, they also had fewer.

3 **Q.** And what does the fact that that was the case back, say,
4 in 2011 tell you as an economist?

5 **A.** Yeah, I think it just -- suppose we sort of accept, like,
6 yeah, today one of the reasons a lot of consumers like Google
7 Play Store is because it has a ton of apps, then you might be
8 asking: Well, why does it have a ton of apps and does that
9 have something to do with the conduct that we're talking about
10 here?

11 The fact that was true all the way back in 2011 says
12 that's not a new phenomenon. It's certainly not a phenomenon
13 that is related to something like Project Hug or RSA 3.0. It's
14 just been true in this market for a very long time. Google
15 came in early, attracted a lot of apps, built a really
16 successful business even in these early years.

17 **Q.** So you mentioned Project Hug. I want to talk to you about
18 that for a while.

19 Can you just really quickly remind the jury of Project Hug
20 as you understand it?

21 **THE COURT:** Next question.

22 **MR. RAPHAEL:** Sure.

23 **BY MR. RAPHAEL:**

24 **Q.** Well, let's just get a couple facts down to set up some
25 other questions I want to ask you.

1 Did the Project Hug agreements require developers to
2 distribute their games exclusively through Play?

3 **A.** No, they did not.

4 **Q.** So if a developer wanted to distribute through Google Play
5 and another app store and they had a Project Hug agreement,
6 were they free to do that?

7 **A.** Absolutely.

8 **Q.** And could Samsung and Amazon pay developers to launch
9 either exclusively in their store or in their store and the
10 Play Store?

11 **A.** Yes. I mean, I think they could take the Project Hug
12 agreement and still launch in Samsung's/Amazon store; and if
13 Samsung or Amazon or any companies like that wanted to have an
14 exclusive, they could outbid what Google was offering to offer
15 an -- to have the developer turn down the Project Hug deal and
16 take their deal instead.

17 **Q.** And have you seen any economic evidence that companies
18 like Samsung or Amazon couldn't afford to do that?

19 **A.** No, I haven't. If you think about companies like Samsung
20 and Amazon, Amazon is a pretty big company with a lot of money,
21 and I don't really see any reason why if they wanted to adopt a
22 strategy of competing in this market by attracting some
23 exclusives early to kind of get off the ground and grow a
24 successful business, that Amazon would not be able to find the
25 money to do that.

1 Q. Now, what was the effect of the Project Hug agreements on
2 the prices that developers paid to Google?

3 A. Yeah. So I think -- I mean, what it says on this slide
4 and the way I think about the Project Hug agreements is they
5 were basically offering a better deal to developers in exchange
6 for putting their apps in Google's Play Store. They offered a
7 bunch of things: Cloud credits, ad credits. You've heard
8 about all these things.

9 But fundamentally it was saying: If you agree to put your
10 app in our app store, we'll give you a bunch of things that are
11 of value. And Google itself estimated about how much is that
12 value and what would that be equivalent to in terms of a price
13 reduction, a reduction in the service fee rate; and they
14 estimated that what they were offering developers was
15 equivalent to: We'll lower our price by 17 percent for these
16 large target developers in exchange for them agreeing to put
17 their apps in the Play Store.

18 Q. Is offering a discount a form of competition?

19 A. Yes. I think it's sort of the most classic -- lowering
20 your price is the most classic form of competition there is.

21 Q. Now, you mentioned Google trying to attract developers.
22 Why is that important?

23 A. I think in this particular situation, you can think about,
24 you know, Google is trying to build a successful app store.

25 What do you need to have a successful app store? You need to

1 attract lots of developers.

2 And not only that, what Google is trying to build is an
3 app store that has a comprehensive set of apps so users know if
4 they go there, they're going to find the stuff that they want.
5 So as part of Google Play's strategy, it's critical to go out
6 and compete to make sure the biggest, most important, most
7 demanded app developers are going to find it in their interest
8 to put their apps in the Google Play Store.

9 **Q.** And is there an example from elsewhere in the economy that
10 might help us understand that competitive dynamic better?

11 **A.** Yeah. There's an example that I found kind of helpful for
12 myself in trying to think through this, to go -- some of the
13 things in this case are complicated. If we go back to kind of
14 an old-fashioned example, think about instead of an app store,
15 a brick-and-mortar store like Macy's. Macy's also competes in
16 the market by trying to offer a great set of products to
17 consumers. It also has a strategy to try to offer a
18 comprehensive set of products so you can go there and know
19 you're going to find all the things you expect to be there, all
20 these different brands and products. So they, too, need to go
21 out and compete really hard to attract these manufacturers,
22 attract these products, to get them to choose Macy's as a place
23 to distribute their products.

24 **Q.** And does that example of Macy's help you understand
25 Project Hug in any way?

1 **A.** Yeah, it does. I think it helps think about: Well, what
2 does Macy's do when it's doing this kind of competing?

3 So we could imagine a situation -- I think we're going to
4 talk about Nike again here, and we just heard about Nike from
5 Dr. Tadelis, so Nike maybe is a little bit of a theme, but my
6 example too was thinking about, you know, think about the shoes
7 that Macy's needs to attract to its store. Nike is a big
8 example of that.

9 So in order to -- suppose here that there's another store
10 in town, call it Galaxy Shoes, which is also competing with
11 Macy's and also trying to attract Nike to have its shoes in
12 their store. Macy's needs to compete for that business of Nike
13 by offering Nike a great deal.

14 **Q.** And so let's say that this other store, Galaxy Shoes you
15 mentioned, was offering Nike a deal to sell shoes only in their
16 store. As an economist, if Macy's was trying to compete, what
17 would you expect that they would do?

18 **A.** Yeah, I think I would expect that they would try and go
19 out and make the value proposition they were offering to Nike
20 better.

21 It's obviously a great thing for Galaxy Shoes. I think
22 Dr. Bernheim and I agree that having an exclusive of a product
23 everybody wants can be a really great strategy for a firm. If
24 this store was the only shoe store in San Francisco where you
25 could buy Nike shoes, that would for sure be great for them.

1 The point is, they don't -- it's not like they have a
2 right to do that in a competitive market. Their competitors
3 don't really want them to do that. That's not great for them
4 to be the only place where you can buy Nikes.

5 And so Macy's would go out and say, "Man, if they are
6 going to go be the exclusive in this other store, we had better
7 make the deal that we're offering them better so that it's in
8 their interest to put their shoes in Macy's."

9 **THE COURT:** Okay. We're going to take our lunch
10 break. We'll be back at 12:30.

11 **THE CLERK:** All rise.

12 (Proceedings were heard out of the presence of the jury:)

13 **THE COURT:** These book-length answers are not going to
14 work. So break it up with questions. Shorter answers, more
15 targeted questions. Okay?

16 **MR. RAPHAEL:** I will do that, Your Honor.

17 **THE COURT:** I'm going to start intervening, and you're
18 not going to like that. All right?

19 **MR. RAPHAEL:** I understand, Your Honor.

20 **THE CLERK:** All rise. Court's in recess.

21 (Luncheon recess was taken at 11:59 a.m.)

22 **AFTERNOON SESSION**

12:36 p.m.

23 (Proceedings were heard in the presence of the jury:)

24 **THE COURT:** Okay.

25 **MR. RAPHAEL:** Thank you, Your Honor.

1 **BY MR. RAPHAEL:**

2 **Q.** Professor Gentzkow, before lunch I think we had gotten to
3 the point where Nike had offered something to -- excuse me --
4 where Macy's had offered something to Nike. Do you recall
5 that?

6 **A.** I do, yes.

7 **Q.** All right. Now, if Nike takes the deal that Macy's has
8 offered and doesn't launch exclusively in Galaxy Shoes, has
9 competition been harmed?

10 **A.** No, it hasn't.

11 **Q.** And just briefly, why not?

12 **A.** That's not harm to competition. That is competition if
13 Macy's offers Nike a bitter deal and Nike takes that deal.

14 **Q.** And is the same thing true if Galaxy Shoes would have made
15 more money or grown faster if it was the only one who could
16 sell Nikes?

17 **A.** Yes, it is true. That's typically what happens in
18 competition, is that if somebody outcompetes you or competes
19 really hard, that often makes you worse off.

20 **Q.** And would it change your mind if part of the deal was that
21 Nike had to bring out the hottest new shoe to Macy's as soon as
22 it was released?

23 **A.** No. I think a natural term of that agreement, if Macy's
24 was saying "We'll give Nike rebates or promotions or a special
25 Nike section of the store in exchange for Nike putting its

1 shoes in Macy's," it would be natural that one of the terms is
2 that doesn't just mean any shoes; it means Nike should put its
3 shoes -- greatest hottest new shoes when they're first
4 released.

5 **Q.** And so let's just bring this quickly back to Project Hug.

6 Does the fact that a developer that had a Project Hug
7 agreement launched in the Play Store rather than exclusively
8 in, say, the Samsung Galaxy Store, does that mean that
9 competition was harmed?

10 **A.** No, absolutely not, for the same reason.

11 **Q.** Now, Dr. Bernheim talked about parity clauses. Do you
12 recall that?

13 **A.** I do, yes.

14 **Q.** And in your opinion, do the parity clauses change the
15 conclusion that you just gave me?

16 **A.** No, they don't. They're like, I think, what we were just
17 talking about, putting the latest shoes. Project Hug offers
18 valuable things to developers in exchange for putting their
19 apps in the Play Store, and it's very natural that one of the
20 terms of that is you don't put your apps there six months later
21 or a year later; you don't put degraded versions of them that
22 don't have as high quality or don't have the same gameplay.
23 We're offering you something, and what you're agreeing to in
24 return is putting those in the app store.

25 **Q.** Now I want to change our example a little bit. Suppose

1 that Nike is thinking about opening a Nike store, maybe not in
2 San Francisco but some new city, and pulling its shoes from
3 Macy's. Are you with me?

4 **A.** Yes, I am.

5 **Q.** And if Macy's was competing in that situation, what would
6 an economist expect that Macy's would do?

7 **A.** It would look very similar I think to the previous
8 example. If Macy's is competing, they need to give Nike a
9 better deal to give Nike incentives to choose their store
10 rather than whatever alternative, like opening their own store,
11 that they're considering.

12 **Q.** And if Macy's did that -- excuse me.

13 If Macy's did that, would that make it less attractive for
14 Nike to open its own store?

15 **A.** Quite likely, yes. I think whenever a firm offers one of
16 its consumers, another firm, a better deal to do business with
17 it like this, that makes it, all else equal, less profitable or
18 less attractive for that firm to go and do that same thing on
19 its own. That's just the way competition works.

20 **Q.** And is that an example of changing incentives?

21 **A.** It is, yes.

22 **Q.** And if the incentives for Nike to open its own store were
23 changed in that way, would an economist consider that to be
24 anticompetitive?

25 **A.** No.

1 Q. So just, again, to quickly bring it back to Project Hug,
2 does the fact that Activision or Riot did not open their own
3 app store indicate that Project Hug blocked competition in some
4 way?

5 A. Certainly not necessarily. If the reason they didn't open
6 their own app store was because Project Hug gave them a good
7 deal to put their apps in the Play Store and they, therefore,
8 chose that instead, that's exactly like this example. I think
9 that's -- that is competition.

10 Q. Just one or two more questions on Project Hug, and then
11 we'll move on.

12 If developers were totally free to open their own app
13 store and no agreement not to, would you still, as an
14 economist, expect to see the sorts of incentives that were
15 offered in those agreements?

16 A. Definitely, yes.

17 Q. And did Project Hug have any effect on the competitiveness
18 of Android phones compared to iPhones in your view?

19 A. I would expect that it would in the simplest way because
20 having a great app store that's comprehensive and has all of
21 the apps consumers are looking for is one of the main selling
22 points in that competition in the phone market.

23 Q. So Project Hug involved agreements with developers. I
24 want to shift gears and talk about agreements with
25 manufacturers.

1 Now, let's just do a little bit of context and try to move
2 through this quickly. When did the agreements with
3 manufacturers that the jury has heard about in this case begin?

4 **A.** Yeah. So almost all of those things started very early in
5 the life cycle of Android. So this exhibit just shows the kind
6 of timeline of Android's growth.

7 It was introduced in 2008, and many of these things that
8 we've been talking about, the MADAs, the AFAs, which I think
9 you've heard something about, the security warnings, as well as
10 Revenue Sharing Agreements, not the premier tier Revenue
11 Sharing Agreements, but Google had Revenue Sharing Agreements
12 with carriers and OEMs also right from the beginning.

13 **Q.** And how big of a player in the smartphone industry was
14 Android in that period of time?

15 **A.** Not very big. You can sort of see Android is the green on
16 this chart. So they're a new entrant. They don't have any
17 market share essentially. In 2008, 2009, '10, even '11,
18 they're still quite small relative to the competition.

19 **Q.** And can you just briefly explain whether that's important
20 for understanding whether Google's conduct today is
21 anticompetitive?

22 **A.** Yes, I think it -- because all of these things were
23 introduced at a time where I think all of us would agree, that
24 I would certainly say that Google did not have monopoly power
25 or even substantial market power in those years, that means

1 there must be some pro competitive reason why introducing those
2 things made sense at that time. There was some reason that
3 Google was creating all of these things that could not have
4 been, at that time at least, in order to extend monopoly power
5 or preserve monopoly power.

6 **Q.** Now, back in this time period when, say, the security
7 warnings and the MADAs were launched, who were -- who did
8 Android phones have to compete with?

9 **A.** They faced a lot competition at that point in time. This
10 plot shows the market shares in that market in 2008. There's
11 Apple who we've heard about.

12 They faced a number of other big players. Microsoft at
13 that time had their own mobile operating system and were
14 investing heavily to promote it.

15 BlackBerrys were in the market, those things with the
16 keyboards you might remember. Palm OS. And actually the
17 largest operating system at that time was Symbian, which had
18 about half of the market.

19 **Q.** Now, for those of us who may not be familiar with Symbian,
20 just briefly what was that?

21 **A.** Yeah, Symbian was a coalition of a number of handset
22 makers, most prominently Nokia, who got together and developed
23 an operating system, as you can see from this, at that point in
24 time was the dominant operating system for smartphones.

25 **Q.** And what happened to Symbian and some of the other

1 companies that were in the industry at that time?

2 **A.** Yeah, so, in fact, all of these platforms, all of these
3 smartphone platforms other than Apple's, are no longer with us
4 and essentially failed.

5 **Q.** And did the failure of any of these platforms have
6 anything to do with app stores?

7 **A.** Yes. I think they broadly had to do with the fact that
8 creating this kind of platform is challenging. In particular,
9 Symbian, which failed here, there's been a lot of study of what
10 happened to Symbian, how did this really successful platform
11 crumble the way it ultimately did.

12 And one of the key things that both academic studies and
13 the founder of Symbian himself called out is the app store
14 fragmentation that existed on Symbian. Basically there were
15 walled gardens where each device maker carrier had their own
16 app stores and there was no comprehensive app store where a
17 user could go or a developer could go to reach everybody.

18 **Q.** And you mentioned those challenges that these companies
19 faced. What was Apple's approach to overcoming those
20 challenges?

21 **A.** If we think of those challenges as to how do we get device
22 makers and great devices and great app stores, the simple
23 answer for Apple is they do those things themselves. They
24 control things directly. They make the phones themselves, the
25 app store themselves, the apps themselves, and they configure

1 the phones themselves. They solve these issues by direct
2 control.

3 **Q.** And what approach did Google take with Android to solving
4 those challenges?

5 **A.** Yeah, the approach of Google, as I'm sure everybody here
6 now knows, was very different. They build Android with
7 partners, device makers, carriers, who themselves can make
8 their own phones, configure them themselves.

9 **Q.** I want to ask you about the economics of that. Does
10 economics tell us that that's an easy thing to do or a hard
11 thing to do?

12 **A.** Yeah, I think economics would say that is a famously hard
13 thing to do. The kind of central point of platform economics
14 is when you have all of these different players who come
15 together, their own incentives, what will do -- give them the
16 most profit individually, may not be well aligned with what it
17 takes to build a good platform. And in order to have a
18 platform succeed, you need to find some way to align those
19 incentives and make the thing work for everybody.

20 **Q.** And is there an example from economics that would help us
21 understand just at a high level that sort of dynamic you
22 mentioned?

23 **A.** Yeah. So that problem, the name that that goes by in
24 economics is a collective action problem, where separately we
25 don't do things so effectively but together we could create a

1 lot of value.

2 So a good example of that is like a pond where there are a
3 lot of fish, and we might all come and go fishing; and if each
4 of us comes and takes a kind of moderate portion of the fish,
5 the ecosystem thrives, we all get a lot of fish, a lot of value
6 is created.

7 However, each of us individually on our own might have
8 incentives to take more fish than that moderate portion; and if
9 we're just acting independently, we are going to -- we might
10 very well pull out too many fish and the whole ecosystem could
11 collapse and not produce all that value.

12 **Q.** And how is a smartphone platform like the pond, just at a
13 high level?

14 **A.** It's obviously not a pond, but I think that key aspect of
15 the collective action problem is the same. The problem with
16 the pond is when I pull out the fish, I don't fully take a
17 count of how doing that impacts the fish stock and everybody
18 else.

19 In the same way, if a device maker makes choices like,
20 say, underinvesting and putting security updates on their phone
21 or putting a bunch of spammy apps on their phone that consumers
22 don't really want, or engaging in the type of fragmentation we
23 said sunk Symbian, where we say "You know what? I'm going to
24 create my own walled garden app store on my own phone that only
25 will be accessible to my consumers," of those are things that

1 can be good for that player individually but bad for the
2 ecosystem as a whole.

3 **Q.** Now, with that background I want to start -- talk in more
4 depth about the specific conduct, and I'd like to start quickly
5 with the MADAs.

6 The jury has heard a lot about the MADAs, and I just want
7 to ask you: Did the MADAs, as an economist in your point of
8 view, contribute value for consumers?

9 **A.** I think they very clearly did. The MADAs are the
10 agreement by which Google licenses all of these apps that it
11 has created -- play, Gmail, and so on -- and gives them a way
12 or licenses, we would say, for free to device makers. It does
13 that through the MADA; and having a bunch of great apps that
14 are available for free clearly makes Android phones better and
15 makes consumers better off.

16 **Q.** Now, you said it makes Android phones better. How would
17 increasing the number of Android phones sold affect the volume
18 of app downloads on Android?

19 **A.** It would, I think, quite clearly increase it. The more
20 phones are sold, the more things are going to be downloaded.

21 **Q.** And is that an effect that an economist would consider pro
22 competitive?

23 **A.** Absolutely, yes.

24 **Q.** Now, has Dr. Bernheim identified any alternatives to the
25 MADAs that Google could have used to solve the problems you

1 mentioned or to deliver the value that you mentioned?

2 **A.** Not to my knowledge, no.

3 **Q.** And I think you touched on some of this earlier, but let
4 me address it directly. Have the MADAs, in your opinion,
5 blocked competition?

6 **A.** No, I don't think they have.

7 I think we might want the next slide.

8 I think the MADAs do not block other app stores from being
9 on the phones. They do not block other app stores from being
10 on the home screen of phones. There are many, many phones.
11 Here are a few examples that do that.

12 I think all the MADAs do is ask in exchange for giving
13 them free apps to the developers, one of the valuable things
14 that Google asks in return is that key apps, like the
15 Play Store, are put on the home screen so those devices, when
16 consumers take them out of the box, have the things they expect
17 where they expect them to be.

18 **Q.** And does that make Android phones more competitive with
19 the iPhone?

20 **A.** I think it does because that kind of out-of-the-box
21 experience is a key selling point of iPhones.

22 **Q.** All right. Let's talk about the RSAs now.

23 Now, RSAs are Revenue Sharing Agreements; right?

24 **A.** Correct.

25 **Q.** Are Revenue Sharing Agreements common in the economy?

1 **A.** Yes, they're very common. There are all sorts. Book
2 publishers use Revenue Sharing Agreements. TV networks use
3 Revenue Sharing Agreements. Movie studios. Epic itself, the
4 plaintiff in this case, uses revenue sharing as well. You can
5 think of commissions that salespeople earn is like Revenue
6 Sharing Agreements.

7 **Q.** And at a high level, how do economics -- at a high level,
8 how do economists think about Revenue Sharing Agreements?

9 **A.** Yeah, I think the key thing in all of those is we're
10 saying is: The thing we're doing together, more of the
11 revenue, the value of that, is going to be shared with you.

12 That means every -- if we're talking about selling phones,
13 every phone that you sell, you are going to earn more revenue
14 from it; and the more that people use it and download apps, the
15 more revenue you're going to earn from it.

16 That gives skin in the game, in a sense, to those
17 partners. It says they are going to have incentives to work
18 harder, to invest more, to try to make great devices just like
19 a salesperson in a store, if they're earning commission, is
20 going to have incentives to work really hard to sell things.

21 **Q.** Now, the jury has heard some about how Android and various
22 things are licensed for no cash price. If that's the case, how
23 could Google offer a discount to phone manufacturers?

24 **A.** Sure. Yeah, so if you start from a price of zero and you
25 want to offer a discount to somebody, like cut the price,

1 obviously that means the price has to go down to something
2 negative. And what is a negative price? A negative price just
3 means I need to give money back to you. That's what a negative
4 price would be.

5 So revenue sharing is a way of cutting the price, lowering
6 the price, by offering more back to the other party.

7 **Q.** Again, just one or two facts to set up your economic
8 opinions.

9 Did manufacturers have to take an RSA 3.0 agreement to get
10 the Play Store on their phones?

11 **A.** No, they did not.

12 **Q.** And for those who did choose to take the RSA 3.0, did they
13 have to put every phone they made on the premier tier?

14 **A.** No, they did not. They could choose whichever devices
15 they wanted, put them on the premier tier, or the nonpremier
16 tiers.

17 **Q.** Now, as an economist, let's talk about the first question
18 that you tried to answer.

19 With respect to RSA 3.0, did it create value for consumers
20 in your opinion?

21 **A.** I think it clearly did. So broadly, as we said, revenue
22 sharing gives device makers incentives to invest in and promote
23 Android and also Google's products and services. It applied --
24 the exclusivity provisions applied not just to app stores but
25 to all of Google's -- many -- several of Google's different

1 apps.

2 And so they were giving incentive to device makers to have
3 clean devices that promote those apps. And also you could
4 think, in a sense, to avoid some of that walled-garden
5 fragmentation that we saw in Symbian and some of these other
6 cases.

7 **Q.** Did the RSA 3.0 relate to competition and security in any
8 way?

9 **A.** It did as well. So one of the other things you need to do
10 if you want to get that extra revenue sharing from the premier
11 tier is agree, as a device maker, to do upgrades, letter --
12 what are called letter upgrades, like new operating system
13 upgrades for the phones, on a timely basis and also install
14 security patches on the phones in a timely basis. That's
15 something that many device makers on their own, historically
16 the data show, don't do. And one of the things Google was
17 asking in exchange was agree to make sure you install those
18 security patches.

19 **Q.** So let's talk about the other part of your assignment,
20 whether the RSA 3.0 blocked competition.

21 And just before we get there, when did RSA 3.0 begin?

22 **A.** Yeah, so I think we saw that on the previous chart as
23 well. This is one of Dr. Bernheim's. They started -- they
24 were -- the first RSA 3.0s were signed in December of 2019.

25 **Q.** And what significance does that have to your economic

1 analysis of the RSA 3.0?

2 **A.** I think a really simple fact is the RSA 3.0 cannot have
3 impacted anything before December 2019. So the entire period
4 of time where Google solved those collective action problems to
5 get this platform off the ground, to have it grow, to have it
6 thrive, to get all of those apps into the app store, and also
7 to achieve what we were looking at before, the fact that a lot
8 of consumers are choosing Google Play as we see in
9 Dr. Bernheim's diagram, all of those things precede the RSA 3.0
10 and, therefore, cannot be caused by the RSA 3.0.

11 **Q.** All right. So with that timeline in mind, did you look at
12 data regarding the Android devices that were sold after RSA 3.0
13 went into effect?

14 **A.** I did, yes.

15 **Q.** Do you have a -- is this a slide regarding that data?

16 **A.** It is, yes.

17 **Q.** All right. Now what are we looking at in this graph on
18 this slide?

19 **A.** Okay. So this is from different data. It's showing new
20 device activations and the share of those new device
21 activations each month that were covered by the premier tier.

22 So you can see before the RSA 3.0 was introduced,
23 obviously that was zero. After it was introduced, it gradually
24 increased for a bit and then flattened out. And over that
25 period from when they were introduced to August of 2022, the

1 end of the data that I had, about 16 percent of all activations
2 were on the premier tier.

3 **Q.** So you talked about the end of the data period that you
4 had. I think it goes to about August 2022. The phones sold in
5 that month, what percentage of them -- and, again, let me just
6 ask you before I ask you that, is this worldwide data?

7 **A.** It is, yes. This is worldwide, excluding China.

8 **Q.** Okay. So back to my question in terms of August 2022.
9 What percentage of Android phones sold in that month were
10 covered by the premier tier?

11 **A.** Yeah, so you can see that's like the very right end of
12 this plot. It's about 27 percent or so.

13 **Q.** And just so we're clear, Dr. Bernheim talked about new
14 phones sold. Do you remember that?

15 **A.** I do, yes.

16 **Q.** And is that what we're looking at with this data here?

17 **A.** Yes, it is. It's actually the same data that Dr. Bernheim
18 was looking at.

19 **Q.** And so what percentage of Android devices that were sold
20 after RSA 3.0 went into effect had no requirement to make the
21 Play Store exclusive?

22 **A.** That would be 84 percent; the difference, 100 minus this
23 16 percent.

24 **Q.** Do you recall Dr. Bernheim presenting some percentages
25 about the RSA 3.0?

1 **A.** He did, yeah. The share who he reported being affected
2 was somewhat higher. I think 40.5 percent.

3 **Q.** And did Dr. Bernheim's data affect your conclusion about
4 the RSA 3.0?

5 **A.** No, it didn't. I think, as I said, we're looking at the
6 same data. The difference arises because Dr. Bernheim, as he
7 said, is not including Samsung in these calculations. So if we
8 take Samsung out, we have about 44.5 million devices activated
9 each month; and of those, 40.5 percent were on the premier
10 tier.

11 **Q.** Was it appropriate, in your opinion, to leave Samsung out
12 as Dr. Bernheim did?

13 **A.** I don't think so, no. I think that the question that
14 we're asking here is: To what extent did the RSA 3.0s block
15 the preinstallation of other app stores? That's the kind of
16 heart of this question; right?

17 And if we want to understand what share of the market was
18 affected by that, Samsung is the largest Android device maker.
19 It's a device maker that on which other app stores are not
20 blocked. In fact, almost all Samsung phones have other app
21 stores on them. So if we want to try to understand how much of
22 the market, what share of the market was affected by the RSA
23 3.0s, it's essential to include the whole market in that
24 calculation.

25 **Q.** And so what happens to the percentage that Dr. Bernheim

1 had if you add in the Samsung devices?

2 **A.** Yeah, so you can see that here. That Samsung brings the
3 total devices up to 67.7 million; and we get back a share,
4 which is what I told you before for August 2022, of about
5 27 percent.

6 **Q.** Now, did you look at similar data for the United States?

7 **A.** I did, yes.

8 **Q.** And is that what we're looking at on the screen here?

9 **A.** Yes.

10 **Q.** And could you just quickly summarize the data for devices
11 sold after RSA 3.0 in the United States?

12 **A.** Yeah. You can see it looks somewhat similar and even
13 lower share of devices are affected. It goes up a little and
14 then flattens out. Overall 8.3 percent of activations over
15 that period were under the premier tier; and at the end of the
16 period, it was about 15 percent.

17 **Q.** And you mentioned that this percentage in the
18 United States is lower than the data regarding the whole world.
19 Why is that?

20 **A.** Well, I think there could be a number of reasons. One of
21 them is that those device makers, like Xiaomi and Oppo and Vivo
22 that Dr. Bernheim highlighted, did put a fair number of their
23 devices on the premier tier. Those OEMs do not have much
24 presence in the United States. They sell very few phones in
25 the United States, and so that's one of the reasons why this

1 share is lower.

2 Q. Now, we have been talking in this data about new phones
3 sold after RSA 3.0. Did you also look at data on all of the
4 phones out in the market at the time those agreements were in
5 place?

6 A. I did, yes.

7 Q. Is that the data that we're looking at on this slide?

8 A. Yes, it is.

9 Q. And could you explain what you found when you looked at
10 that data?

11 A. Yeah. So, again, to be clear, before we were looking at
12 the kind of flow of new devices coming into the market. This
13 is now the set of all active Android devices in November 2021,
14 including some that were sold before the premier tier came into
15 effect. And if we look at that whole market, the premier tier
16 only covers about 7.4 percent of devices worldwide.

17 Q. So what percentage of devices as of November 2021 around
18 the world had no requirement to make the Play Store the
19 exclusive app store?

20 A. 92.6 percent.

21 Q. And, again, did you look at similar data for the
22 United States?

23 A. I did, yes. And, similarly, to what we saw before, that
24 share is even smaller. So 4.6 percent were affected in the
25 United States and about 95 percent had no Play-exclusive

1 restrictions.

2 **Q.** Now, why did you look at data regarding devices that were
3 sold both before and after RSA 3.0?

4 **A.** Yeah. I think both of those are -- of these things are
5 important to look at. It's important to look at the new
6 devices. This, I think, is also very important because if one
7 of the questions we're asking is what is the impact of this on
8 the market as a whole, how different would things have been in
9 the world for app developers, for users, in a world where the
10 RSA 3.0 didn't exist, at most that would have changed what was
11 happening with the little blue sliver of this pie chart. And
12 so everything else as of November 2021 would have been the same
13 and could not have been changed by that.

14 So I think this is the appropriate thing to look at for
15 assessing the impact on the market as a whole at that point in
16 time.

17 **Q.** All right. Let's talk quickly about security. It's
18 another thing the jury's heard a lot about. I just want to ask
19 you a couple questions about it as an economist.

20 So how does an economist think about how security relates
21 to competition?

22 **A.** Yeah, I think very simply, security is a characteristic of
23 smartphones that consumers really, really care a lot about for
24 obvious reasons; and, therefore, it's a key dimension that if
25 you want to be a successful phone maker, you better compete

1 hard to try to make really good.

2 **Q.** And have the sideloading warnings that the jury's heard
3 about in your opinion blocked or foreclosed competition?

4 **A.** No. The conclusion overall of my analysis of this was
5 that they have not. I think there are a number of data points
6 that speak to that. Some of those I think you heard from
7 before, Dr. Qian, who presented some things related to that as
8 well.

9 I might show just one data point here that speaks to that.
10 This is data I had access to for the whole world, that for each
11 country shows what share of devices in that country have the
12 unknown sources setting activated. So what share of all of the
13 devices in that country have the consumers downloaded at least
14 one app that required changing that setting.

15 So if we're trying to think about does that setting --
16 does the friction associated with that setting block users from
17 downloading apps if they want to, if they have a reason to --

18 **Q.** Professor, what did you find in various countries when you
19 looked at that data?

20 **A.** Yeah. So then the data show there are many countries in
21 the world where the share of users who can do that is quite
22 high.

23 **Q.** And what conclusion do you draw from the data showing that
24 those percentages are high?

25 **A.** I would conclude that in Nigeria, in India, in Indonesia,

1 in Brazil, all of these places, when users do have a reason to
2 want to sideload apps, they don't seem to have a very hard time
3 doing that.

4 **Q.** All right. Let's talk now about the service fees.

5 And, first of all, are service fees themselves, just the
6 fee percentage, is that something that can be anticompetitive
7 conduct?

8 **A.** Not on its own. It could be -- it's a price that Google
9 is charging. A price can be high or low, but it's not itself
10 exclusionary conduct.

11 **Q.** All right. Now just a few questions on context with the
12 service fees.

13 Does it cost Google a large amount of money to develop and
14 maintain Android and Google Play?

15 **A.** Yes, it does.

16 **Q.** And as a matter of economics, is it important for Google
17 to earn a return on those investments?

18 **A.** Absolutely. I think the key thing that economics teaches
19 us about markets, or one of them at least, is that firms are
20 acting in their own interests trying to maximize profits. And
21 so if there are investments that they could make that would
22 create a lot of value for society, if there's not a way for
23 them to earn an economic return on those investments, they're
24 very likely not going to make them and that value for society
25 is not going to be created.

1 Q. And is the same thing true for any intellectual property
2 that Google has in those investments?

3 A. Yes. In the same way you would not invest a lot of money
4 to develop intellectual property if you could not earn some
5 economic return on that investment.

6 Q. Now, did you look at how many developers actually paid
7 service fees?

8 A. I did, yes.

9 Q. And what percentage of developers actually pay a service
10 fee?

11 A. That percentage is very, very small. You can see here the
12 share of developers in 2021 who paid no service fee to Google
13 whatsoever. That was about 98 percent. And so only about
14 2 percent were required to pay any service fee at all.

15 Q. And the jury's heard some about a 30 percent service fee.
16 What percentage of developers pay a 30 percent service fee?

17 A. Only 0.06 percent of developers.

18 Q. Now, have you compared Google's service fees for the
19 Play Store to the service fees that other app stores charge?

20 A. I have, yes.

21 Q. All right. Now, I think the jury's heard a number of
22 these figures. I just want to ask you as an economist what the
23 results of your analysis were.

24 A. Yeah. So this is just one way of illustrating those
25 different service fees across platforms. Google is the third

1 row up there. So this range just shows the published service
2 fee rates for Google Play are 30 percent and 15 percent as we
3 all know.

4 And I won't read out all the details of this. I think
5 just broadly, the conclusion is the service fee rates that
6 Google is charging are broadly similar to many other platforms
7 and in terms of the published rates are lower, like some
8 platforms like Nintendo and the PlayStation and the Samsung
9 Galaxy Store.

10 **Q.** Now, have you looked at the service fees that Epic pays to
11 other app stores?

12 **A.** I did, yes.

13 **Q.** And is that what we're looking at on this slide?

14 **A.** Yeah. So this comes from Epic's own data, and it shows
15 how much did Epic pay in service fees and at what rate. So you
16 can see that Epic paid Sony a 30 percent service fee on all of
17 its revenue from Sony. That was about \$470 million that it
18 paid. It paid a 30 percent fee to Microsoft. That was about
19 \$260 million. It paid a 30 percent fee to Nintendo. That was
20 about \$166 million.

21 I won't read all of them, but it also paid a 30 percent
22 fee to Google, which totaled about \$3 million; and it paid
23 Samsung a little bit less than that at 12 percent.

24 **Q.** And what do these service fee rates and data regarding
25 Epic tell you as an economist about whether competition has

1 been harmed?

2 **A.** I think they say that this service fee rate that Google is
3 charging is aligned with what many other platforms are
4 charging, not just in their published rates but also in terms
5 of what's actually paid by a developer like Epic; and also that
6 Epic has paid these kinds of service fees at very high rates to
7 lots of other platforms.

8 **Q.** All right. So I want to talk about when developers pay
9 the service fee.

10 And I think you've heard, does Google charge developers
11 service fees on digital goods after an app has already been
12 downloaded?

13 **A.** Yes. So it charges the service fee regardless of whether
14 the app is monetized through the initial download fee or
15 through in-app purchases that happen after download.

16 **Q.** And does that indicate to you as an economist that there's
17 some problem with competition?

18 **A.** No, I don't think it does.

19 **Q.** And could you briefly explain why not?

20 **A.** I think -- so, first of all, the service fee, as I think
21 we've already heard in testimony, is a price that Google
22 charges for the value of the Play Store, and all of these
23 transactions depend on the match the Play Store makes between a
24 user and an app developer. So if there was no match, there
25 would be no in-app transactions. All of those later in-app

1 transactions only happened because the app was downloaded from
2 the Play Store.

3 **Q.** And so we have two phones on the slide here. Does this
4 help you understand the economic conclusion that you just gave
5 us?

6 **A.** Yeah. This is a particular example of one of the main
7 ways that these in-app purchases happen, not the only one,
8 which is sometimes called the freemium model. So back in the
9 old days, it used to be the case when you -- most of the way
10 you paid for apps was you paid something like 4.99 when you
11 download it. That's what this phone on the left shows.

12 Since then, the dominant model has shifted to one where
13 you don't pay anything for the download. The app developer
14 says, "No, you can download our app for free. Try it out. See
15 if you like it." And then you only pay a bit later at the end
16 of that free trial when you decide you want to upgrade to the
17 full version.

18 So that's what's shown here on the right. Instead of
19 paying 4.99 when you download it, you might pay 4.99 a few days
20 or a week or somewhat later once you decide to upgrade to the
21 full version.

22 **Q.** And is it Epic's business model to give Fortnite away for
23 free and then charge later?

24 **A.** It is, yes.

25 **Q.** And would it make economic sense to you that Epic would

1 pay a service fee if it charged upfront but not if it charged
2 later?

3 **A.** No. I think if you look at this example, from an economic
4 point of view, this 4.99 is very similar. In both cases, the
5 developer is saying, "You know what? If you want our product,
6 you pay us 4.99." The only difference is that this freemium
7 model allows that transaction to happen a bit later after the
8 app has been downloaded, but otherwise economically, these
9 things are very similar.

10 **Q.** Now, you mentioned the freemium model where it's free and
11 then you pay later. What percentage of Google's revenue from
12 the Play Store comes from apps that charge not upfront but
13 sometime later?

14 **A.** Yeah, it's a very large share. So this is -- this
15 includes freemium, like the kind of free trials we were talking
16 about. It also includes other in-app purchases; like in
17 Fortnite you buy V-Bucks and you might do that over time.

18 Putting all those things together, 99.5 of all app
19 developer revenue comes from those purchases that happen after
20 an app has been downloaded, and those are apps that charge
21 nothing for the download itself.

22 **Q.** So if Google didn't collect any service fees for apps that
23 are free to download and then the developer charges later,
24 would Google make any money from the Play Store?

25 **A.** It wouldn't make much money. It would make that little

1 gray sliver there on the chart only.

2 **Q.** And how would that affect Google's incentives to invest in
3 innovation or intellectual property?

4 **A.** Well, as we said before, companies need to earn an
5 economic return. The service fees in the Play Store are one of
6 the main ways that Google earns an economic return on its
7 investments in the Play Store and also its investments in
8 Android.

9 If it could only collect the service fee on downloads, it
10 would not earn any of that return for the most part, and its
11 incentive to make those investments to support the platform, to
12 keep improving the platform, would be dramatically diminished.

13 **Q.** All right. Let's talk now about the billing policy.

14 Did you listen to Dr. Tadelis' testimony about the billing
15 policy this morning?

16 **A.** I did, yes.

17 **Q.** And do you agree with his conclusions about the effect of
18 Google's billing policy on competition?

19 **A.** No, I do not.

20 **Q.** All right. So to understand that, I want to ask you: Is
21 there any economic reason why Google would want to require
22 developers to use its own billing system?

23 **A.** I think there's a very clear and obvious one. It's a
24 little bit like why you need to use a cash register in a store.
25 Google collects this service fee. That's one of the main ways

1 that it earns a return. It needs to do that from millions of
2 different apps and millions of different transactions that are
3 happening all over the world every day.

4 When those transactions happen through Google's billing
5 system, it can securely and efficiently collect that service
6 fee and remit the remainder to the developer, and that provides
7 a lot of value and efficiency to the market.

8 **Q.** And is Google the only company or platform you're aware of
9 that uses that mechanism?

10 **A.** No, it's not. And I think actually a really important
11 data point to think about the economics of this is an
12 overwhelming share of the platforms that I am aware of, and
13 I've listed some of them here, all require you to use their
14 billing system when you make purchases.

15 So let me just call out a couple of examples. Airbnb, if
16 you book a room on Airbnb with a host, the host cannot say what
17 billing -- how they want to collect payments. You use Airbnb's
18 billing system. Airbnb earns an economic return on its
19 investments by taking a commission. That's the way they make
20 money, and they use that billing system.

21 So take a different example rover.com is a website where
22 you can find a dog walker or somebody to take care of your dog.
23 The person who takes care of my dog I found on rover.com. We
24 met that person in 2020 when we first connected with him, and
25 we're still required today to make all of our purchases, the

1 payment for every time he walks our dog, through rover.com's
2 payment system.

3 **Q.** Now, if platforms or apps like that could not require
4 their customers to use their own billing system, what would --
5 how would that affect their ability to earn a return?

6 **A.** Yeah, so you could think about either of those examples.
7 Take the Airbnb example, say imagine what would happen if
8 Airbnb said, "Actually, you know what? Hosts can collect money
9 for the room that you book however they want. They can accept
10 cash or a check or PayPal, Stripe, whatever they want. They
11 get to choose. That's their business."

12 Think about the problem that Airbnb would then need to
13 solve. With those thousands and thousands of transactions
14 happening every day, it would need some way, first of all, to
15 figure out how much is owed to it. It would need a way for
16 those hosts to somehow send in that money to them. It would
17 create a big incentive for hosts to try and avoid paying.
18 Like, "Hey, pay us some cash and we won't charge you."

19 So Airbnb would need a way to follow up and collect those
20 fees, enforce those fees. It would need to process refunds, do
21 all kinds of other things. All of those things are taken care
22 of automatically and efficiently if you just pay through
23 Airbnb's billing system.

24 **Q.** So just to quickly bring this back to Google Play, would
25 it be more or less efficient for Google to collect its service

1 fee if it didn't require developers to use its own billing
2 system?

3 **A.** I think it would be less efficient for the same reason.
4 Not impossible, but it would be less efficient.

5 **Q.** Now I want to talk about physical goods.

6 Does Google charge service fees for both physical goods
7 and digital goods?

8 **A.** No. I think that's something that Dr. Tadelis mentioned
9 as well. The service fee only applies to digital goods, not to
10 physical goods.

11 **Q.** All right. Let's talk about that in the context of the
12 billing policy.

13 If Google's billing policy was designed to collect
14 Google's fees, as I think you were just mentioning, would you
15 expect Google's billing system to be used for all transactions?

16 **A.** No. If the economic purpose of this requirement is to
17 collect the service fee securely and reliably, I would expect
18 Google to require that on exactly those transactions where
19 there are service fees, which means digital goods and not
20 physical goods.

21 **Q.** Now, if Google was actually trying to monopolize billing
22 services, as I think we heard from Dr. Tadelis, what would your
23 expectation be about Google's policy in that situation?

24 **A.** I mean, I can't say for sure what they would do in that
25 hypothetical, but a very natural thing is they might want to

1 take over and impose their coercive tie on all of these
2 products because they're all very valuable transactions.
3 There's a ton of transactions going through Amazon and all
4 these other places. So if they were trying to make money from
5 monopolizing billing services, I think it would be quite likely
6 they'd try to do this for all those transactions.

7 **Q.** And what does Google's policy actually require?

8 **A.** Google's billing policy requires developers to use its
9 billing system in exactly those transactions where service fees
10 are owed and in none of the transactions where they're not
11 owed. So that applies, in particular, it's required for
12 digital goods; it's not required for physical goods.

13 **Q.** And what does that indicate to you about the reasons why
14 Google has the billing policy that it has?

15 **A.** It seems very consistent with the purpose being to collect
16 the service fee.

17 **Q.** Now, if developers could use their own billing system, as
18 Dr. Tadelis testified about, as an economist, would you expect
19 that Google would still charge service fees on in-app purchases
20 through those other billing systems?

21 **A.** Absolutely. We said this is a price for the services that
22 Google Play is providing. Developers are consuming those
23 services, all of the valuable stuff, regardless of how they
24 collect the payment. Just like if Airbnb didn't collect their
25 payments that way, they wouldn't get rid of their commission

1 and say, "Okay, rooms are now free. We don't take any
2 commission." Here, too, Google I would expect to charge their
3 service fee regardless -- or at least some service fee
4 regardless of what billing system you used to pay.

5 **Q.** Now, if a developer doesn't want to pay Google's fee
6 today, does it have any choices that you've been able to
7 observe?

8 **A.** Yes. One of the things that Google expressly allows is
9 developers are welcome to collect payment for in-app goods and
10 services through lots of other channels, including on websites
11 of the various developers.

12 **Q.** And have you identified some examples of developers that
13 do that?

14 **A.** Yeah. There are a number of examples. Epic, as we've
15 talked about, is one. There's lots of others. You can go buy
16 a subscription to Spotify or the *New York Times* or Netflix on
17 their website. Google collects no service fees. You can then
18 use that subscription in your Android app. The same is true
19 for Minecraft, you know, stuff for the Minecraft game, HBO Max
20 subscriptions, everything else on this slide.

21 **Q.** So we've been down in the details a little bit. I want to
22 step back again now, and I think just two more topics.

23 So are there any indicators that economists can look at to
24 see if conduct as a whole, not, you know, contract by contract,
25 but conduct as a whole is pro competitive or anticompetitive?

1 A. There are, yes.

2 Q. And what are some of those indicators?

3 A. I think -- I think the standard things that we might look
4 at to see does this look consistent with a market where there's
5 competition creating value for consumers are what's happening
6 to the price, what's happening to quality, and ultimately
7 what's happening to output. And if there is competition, we'd
8 expect that's lowering the prices, that's raising the quality;
9 and because of all of that, ultimately there's more output
10 being created.

11 Q. So let's talk about prices first. Did you look at whether
12 prices in the markets at issue here are going up?

13 A. I did, yes.

14 Q. And what did you look at to understand that?

15 A. Yeah, so one of the things I looked at is what's shown in
16 this figure, which is what share of apps have to pay any
17 service fee. You'll recall we said a large share of developers
18 don't pay service fees. That hasn't always been true. So
19 since about 2010, that's -- the share who pay any service fees
20 at all has fallen from almost 40 percent all the way down to
21 less than 10 percent.

22 Q. And how about the service fee rates? I just want to ask
23 you: Are those going up?

24 A. No, they're not going up. They've been roughly -- this is
25 the 30 percent rate we talked about -- roughly constant over

1 time.

2 Q. Now, did you hear Dr. Bernheim say that Google's prices
3 are going up?

4 A. Yes.

5 Q. And do you remember seeing this chart in his presentation?

6 A. Yes, I do.

7 Q. Do you agree with Dr. Bernheim that this chart shows that
8 Google's prices are going up?

9 A. No. So I think what this chart shows is how much revenue
10 Google gets per app download. So take the total revenue
11 collected and divide it by the number of downloads. I think
12 Dr. Bernheim said that that was the correct economic definition
13 of the price in this market, and that's something that I
14 disagree with.

15 Q. And just briefly, why do you disagree with that?

16 A. I think it might be helpful to just think about an
17 example. Suppose that the service fee rate Google is charging
18 is constant at 30 percent, and suppose developers start doing
19 better and better. For example, they introduce new games that
20 generate a lot of revenue. They put new things in their games
21 that generate a lot of revenue. The value the developers are
22 getting from the ecosystem is going up and up. That would
23 increase Google's revenue-per-app download, but Google hasn't
24 changed their price there. Google hasn't changed anything.
25 The service fee rate they're charging has stayed the same.

1 All that's happened is developers are doing better.

2 Usually when we raise the price, that makes the counterparty on
3 the other side have less surplus because we're talking more of
4 it. This is different than that.

5 **Q.** And you mentioned quantity. What's happening to quality?

6 **A.** So quality over the broad sweep in many different
7 dimensions has gone way up. Android Google Play are way better
8 than they were in the past. I'm not going to go through all
9 the things on this slide in detail, but it's just a list of
10 many of the new features that Google has introduced to Google
11 Play specifically on the developer side: Support for new kinds
12 of payments, tools for developers to develop their apps,
13 analytics for developers to see how their apps are doing, and
14 lots of other things, a huge number of things over time that
15 have made quality higher.

16 **Q.** All right. The last indicator is output. And, first of
17 all, why do economists look at output?

18 **A.** Yeah, I think output is a rough, not perfect, but kind of
19 rough summary measure of how much value ultimately is being
20 created for consumers. How much are we actually consuming and
21 using and getting value from?

22 **Q.** And has output of Android smartphones been going up or
23 down since Android was released?

24 **A.** It's gone dramatically up. You can see that in this
25 figure. So currently worldwide there are about 200 million

1 Android smartphones sold every quarter.

2 **Q.** And how about app developers revenue? I think you
3 mentioned this, but is that going up?

4 **A.** That has also gone up dramatically over time. You can see
5 that in this figure. So it's currently about \$8 billion per
6 quarter of revenue value that app developers are getting from
7 the Android ecosystem.

8 **Q.** So we've been talking about the actual world with Google's
9 conduct. Is there any evidence that you've been able to see as
10 an economist to test what the world would look like without
11 Google's conduct?

12 **A.** Yes. So I don't have the ability to compute that
13 precisely to tell you here's exactly what would happen. I
14 would say a lot of the analysis that I've done and that I've
15 been talking about speaks to that broadly, but one data point I
16 think is interesting to look at for this specific question is
17 the case of China.

18 **Q.** And just briefly, why do you think it's interesting to
19 look at China to see what the world might look like?

20 **A.** Yeah, so I think we've said a couple of times today that
21 Google Play and the challenged conduct in this case are not in
22 China basically because the Chinese government doesn't allow
23 any of these things like the MADAs, for the most part Revenue
24 Sharing Agreements, the Google Play Store. None of that stuff
25 is allowed in China. And so we can think of that as in no way

1 a kind of perfect comparison but one example of the kind of
2 thing that can happen when those things that Google is doing to
3 address those collective action problems aren't there.

4 **Q.** And so what do things look like for app developers in
5 China without Google's conduct?

6 **A.** Yeah, so something that is true in China is there are
7 many, many app stores. I think there are about 20 main --
8 excuse me -- 20 main app stores in China. You might think that
9 leads to really low prices. It actually leads to higher prices
10 in many cases.

11 There are many -- there are a number of examples in China
12 of app stores whose service fees are not 30 percent but
13 50 percent. That fractured app store landscape looks a lot
14 like the walled gardens on Symbian. Each device maker often
15 has their own app store. They kind of fight with other app
16 stores to keep them off their phones. There's a lot of copying
17 of apps without permission of the app developer across those
18 app stores. It doesn't look so great for developers.

19 **Q.** And what does the app landscape look like for users in
20 China?

21 **A.** Similarly, it's not so great in many ways. So there's a
22 lot more malware and security issues. There are a lot of fake
23 apps. So you try to download something and don't realize it's
24 not the real app. Outdated apps. A new version exists, but
25 somehow you're downloading a very old version.

1 And it's hard to find the apps you want because there are
2 20 different app stores. It's a little bit like streaming
3 services where you have to kind of try to figure out where the
4 show you want to watch is. Here, you have to look across all
5 the different app stores to figure out where the apps you want
6 are.

7 **Q.** So before we wrap up, let's talk about Epic, the plaintiff
8 in this case.

9 In your opinion, was competition harmed in a way that
10 harmed Epic?

11 **A.** No, I don't think so.

12 **Q.** We talked before about the different channels that
13 developers can use. Which of these channels has Epic used to
14 distribute Fortnite?

15 **A.** All of them.

16 **Q.** Let's talk about Epic and RSA 3.0.

17 The jury's heard a little bit about the Fortnite not being
18 able to run on every phone out there. Did you look at data on
19 the percentage of Android devices that could actually run
20 Fortnite?

21 **A.** I did, yeah. So the Epic website shows a list of all of
22 the devices that are compatible with Fortnite. So what I was
23 able to do was take that list, combine it with the data I
24 showed you before on which devices are covered by the premier
25 tier, to see, well, what share of the devices that are actually

1 able to play Fortnite were affected by the premier tier, and
2 that's what's shown in this plot.

3 **Q.** And so what did you find in that data?

4 **A.** So worldwide in 2021, of all Android devices that are
5 capable of running Fortnite, 0.4 percent of them were covered
6 by the premier tier terms of the RSA 3.0.

7 **Q.** And did you look at similar data for the United States?

8 **A.** I did, yes. Similar, that number is 0.6 percent.

9 **Q.** All right. Now, we've been looking at a lot of these
10 percentages related to the RSA 3.0. What conclusion do you
11 draw from the size of the percentages of devices covered by
12 RSA 3.0?

13 **A.** I think putting all these data points together, on the new
14 phones, on the stock of phones, it says that whatever might
15 have been happening with the RSA 3.0s, they only ultimately
16 impacted a small share of the market, and the share of the
17 market that was affected was not that large.

18 **Q.** I want to talk about Epic and the service fee and about
19 purchases of V-Bucks.

20 So did you look at data on how many Android users buy
21 V-Bucks on channels like these outside of Google Play's billing
22 system?

23 **A.** I did, yes.

24 **Q.** And is that the data that we have on this slide here?

25 **A.** It is, yes.

1 Q. And could you explain what you found in that data?

2 A. Yes. So I think it's maybe helpful to say very clearly
3 what these data show.

4 So this is looking, first of all, at the universe of
5 Android Fortnite players. So the data here come from Epic, and
6 the data span the period from when Epic was first -- when
7 Fortnite was first available on Android in 2018 up to a little
8 bit later than this October, I think, 2020. So Android
9 Fortnite users here is anybody who played Fortnite on Android
10 during that period.

11 And then I focused on the period of time where Fortnite
12 was available on Google Play to see what share of purchases
13 were going through Google Play's billing system versus other
14 billing systems or no purchases at all.

15 Q. And what did you find when you looked at that?

16 A. Yeah, so that's shown here. So if you look at all of
17 those Android Fortnite players, in this time period, April to
18 August 2020, that's the period when it was available on Play,
19 69 percent of those players made no purchases; 29 percent of
20 them made purchases of V-Bucks, but only through other billing
21 systems, meaning they bought them on the PlayStation or they
22 bought them on Epic's website or they bought them somewhere
23 else; only about 2 percent of them made any purchases that
24 involved Google Play's billing system.

25 Q. All right. And I think this is the last time I'm going to

1 ask you this, but did you look at similar data for the
2 United States?

3 **A.** Yes, I did.

4 **Q.** And just quickly, what did you find there?

5 **A.** I think you can see it in the figure. The pattern is
6 very, very similar. Here, 2.8 percent of Android Fortnite
7 players used Google Play's billing system.

8 **Q.** All right. We've looked at a lot of data. I think this
9 is the last set of questions about data, and then we'll wrap
10 up.

11 So are you familiar with the concept of a natural
12 experiment in economics?

13 **A.** I am, yes.

14 **Q.** And just at a high level, what is a natural experiment?

15 **A.** Broadly, a natural experiment just means something we can
16 find out in the world where something changed in a way that
17 let's us isolate an effect that we're interested in and measure
18 it clearly.

19 **Q.** And did you find any natural experiments that are relevant
20 to the issues that we've been discussing in this case?

21 **A.** Yeah. I think a very natural, natural experiment to look
22 at here is this event here where part of the runup to this
23 case, Fortnite was pulled out of the Google Play Store.

24 **Q.** And was Fortnite also removed at one time from the Apple
25 App Store?

1 **A.** Yes, exactly. So at that same time it was removed both
2 from the Play Store and from Apple's app store.

3 **Q.** And what happened to Fortnite revenue on iPhones after
4 it was removed from the Apple App Store?

5 **A.** So as you would expect, if it was the case that other
6 channels for app distribution are blocked, which remember we
7 said it kind of is on Apple because Apple's app store is the
8 only game in town, consistent with that, on Apple after
9 Fortnite is removed, the revenue that Epic was earning fell
10 essentially to zero.

11 **Q.** And how does that compare to what happened in the
12 Google -- or excuse me -- on Android when Fortnite was removed
13 from the Google Play Store?

14 **A.** It was very different. So Epic's revenue fell a little
15 bit, fell by some, but it stayed much, much higher consistent
16 with the fact that on Android, the Play Store is not the only
17 game in town. It is possible for users to download and play
18 Fortnite through many different channels.

19 This reflects both the fact that some users were able to
20 substitute from the Play version to, say, the Samsung Galaxy
21 version, as well as the fact that lots of people had already
22 downloaded Fortnite from the Galaxy Store or from the website,
23 and they were playing on those versions as well.

24 **Q.** Now, you mentioned the revenue did go down a little bit.
25 Does that indicate anything to you?

1 **A.** Well, I guess what it indicates is just that some people
2 do get value from the Play Store consistent with everything
3 we've been saying. It's a great store. Some people really
4 like getting their version of Fortnite there. And so I don't
5 think it would make any sense to say nothing changes if
6 Fortnite's not on the Play Store, but I think the point is that
7 these other channels are very viable as well.

8 **Q.** All right. We've reached the end. In conclusion, based
9 on your review of the economic evidence, has Google's conduct
10 harmed the competition or consumers?

11 **A.** No.

12 **Q.** And has Google's conduct benefited competition and
13 consumers?

14 **A.** I think absolutely, yes.

15 **Q.** And did the benefits of Google's conduct for competition
16 and consumers outweigh any harm for competition and consumers?

17 **A.** I think clearly, yes.

18 **Q.** And why do you say that?

19 **A.** I think, as we said, I don't identify any harm to
20 competition here which I would characterize as substantial. I
21 think the benefits to this conduct, if we imagine a world where
22 Google wasn't able to do any of these things that we've been
23 talking about, the impact that that could have on the Android
24 platform means that a lot of value would be lost and,
25 therefore, is created. So I think the comparison of those two

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1 things, to me, seems very clear.

2 **Q.** And have you seen any alternatives that Google could have
3 used to deliver the same value to consumers without any
4 additional substantial costs?

5 **A.** Certainly not for many of the parts of the conduct we're
6 talking about.

7 **MR. RAPHAEL:** I pass the witness, Your Honor.

8 **THE COURT:** Okay. Let's stand up for a moment. We'll
9 take our afternoon break in a little bit.

10 (Pause in proceedings.)

11 **THE COURT:** Okay.

12 **CROSS-EXAMINATION**

13 **BY MR. EVEN:**

14 **Q.** Good afternoon, Professor Gentzkow.

15 **A.** Good afternoon, Mr. Even. Good to see you.

16 **THE COURT:** Before we start, keep in mind this will be
17 balanced against any rebuttal.

18 **MR. EVEN:** I'll keep that in mind.

19 **THE COURT:** It is a wasting asset. I want to be clear
20 about that.

21 **MR. EVEN:** Understood, Your Honor.

22 **THE COURT:** All right. Go ahead.

23 **BY MR. EVEN:**

24 **Q.** You billed Google at a thousand dollars per hour you said
25 on this case; correct?

1 A. That's correct, yep.

2 Q. As of the time of your deposition in March 2023, you had
3 worked about 750 hours on this case?

4 A. That's correct, yep.

5 Q. And in addition to that, you are being supported by an
6 expert shop called an Analysis Group of whose collections from
7 Google you receive 20 percent; is that right?

8 A. That's correct.

9 Q. And as of March 2023, you've collected about \$2.2 million
10 from that source; correct?

11 A. That's correct.

12 Q. And so by March 2023, in addition to the 750 or all
13 together, rather, you've earned nearly \$3 million from Google?

14 A. That's correct.

15 Q. How much have you earned from Google by now?

16 A. I don't know. I think it's something slightly higher than
17 that, but probably not much higher than that because most of
18 the work I did in the case was previous.

19 Q. And what you're saying to this jury, all that money is
20 that everything they've heard about agreements not to compete,
21 payments to prevent contagion, all that is competition on the
22 merits? That's the gist of your opinion?

23 A. No.

24 Q. Okay. Let's take a look at that.

25 You said that one of the key questions that you were

1 trying to answer is whether Google's conduct blocked
2 competition in a way that destroyed value for consumers;
3 correct?

4 **A.** Yes, that's right.

5 **Q.** And you conclude that the answer is negative because in
6 your view, users and app developers are not foreclosed from
7 alternative means of app distribution; correct?

8 **A.** I would say that's one of the inputs into that conclusion,
9 yes.

10 **Q.** And it is your testimony that Google's conduct did not
11 substantially limit access to any form of app distribution;
12 correct?

13 **A.** I think my conclusion is it did not substantially limit
14 access to forms of app distribution, yes, I think that's fair.

15 **Q.** And you haven't defined exactly in your report or today
16 what "substantially limited" means; correct?

17 **A.** I'm happy to define it for you if you would like. I don't
18 think we talked about it today.

19 **Q.** Let's try and test it a little bit, and let me try to
20 start with direct downloading and see whether we can agree on
21 whether Google's unknown sources install flow substantially
22 limits access to that channel.

23 You did not calculate any number to show how many users
24 are deterred from downloading competitive app stores because of
25 the unknown sources warnings; correct?

1 **A.** Correct.

2 **Q.** And, in fact, you're not even able to give an approximate
3 number of how many app stores, for instance, were not
4 downloaded because users were deterred by the unknown sources
5 warnings; correct?

6 **A.** I wouldn't want to offer a specific number either way.

7 **Q.** You couldn't even give an approximate number; correct?

8 **A.** Yeah, I wouldn't want to give an approximate number
9 either. That's not a specific quantitative analysis I've done.

10 **Q.** Now, you were here yesterday for Professor Bernheim's
11 testimony; correct?

12 **A.** Yes, I was.

13 **Q.** And you saw that Professor Bernheim in Slide 35 --
14 sorry -- in Slide 22 of his demonstrative, which we can put up
15 if you need to look at it again -- it's also in your binder
16 before you -- has identified a 35 percent drop of users
17 specifically when warnings were shown during the unknown
18 sources install flow from the Epic Games app. Do you remember
19 that?

20 **A.** I remember seeing this, and I'm happy to tell you, if you
21 would like, what I infer from it.

22 **Q.** Well, what I want to ask is: Assuming Professor Bernheim
23 is correct in his testimony, is a 35 percent drop a substantial
24 limitation on access to this alternative distribution channel?

25 **A.** I just want to make sure I understand the premise, what we

1 mean by saying it's correct. I think the numbers in this chart
2 are correct, but I don't agree with the conclusion.

3 **Q.** Sir, I'm asking a pretty simple question.

4 **A.** Mm-hmm.

5 **Q.** If Professor Bernheim is correct, the 35 number --
6 35 percent number is associated with a drop that happens during
7 and because of the warnings, would that be a substantial
8 limitation on access?

9 **A.** If that were the case, I would not conclude from that,
10 certainly not from that alone, that this security warnings
11 substantially harm competition, no.

12 **Q.** That's not enough?

13 **A.** It's not about the number exactly. It's about what was
14 the overall impact of what we're talking about here on
15 competition in the market.

16 **Q.** All right. Would a 50 percent drop be enough?

17 **A.** Again, I think it's not about the specific number in
18 isolation.

19 **Q.** Okay. Let's go take a look at Exhibit 682, it's in your
20 binder, it's in evidence, and go to slide 11.

21 **A.** Can I look at it on the screen or would you like me to
22 open the binder?

23 **Q.** You can look at it on the screen. Whatever is more
24 convenient for you.

25 Now, you see that the heading on this slide discusses

1 Amazon, and the jury has seen before, talks about how Amazon is
2 strongly promoting a 50 percent discount on in-app purchases,
3 but for now switching hurdle is too high for most users? Do
4 you see that?

5 **A.** I do, yes.

6 **Q.** And if you go down to the rectangle, the blue rectangle on
7 the right, you see that it says "Significant hurdle to
8 switching to Amazon APK" and then it says "process is quite
9 complex, involves 14 steps." Do you see that?

10 **A.** That is right, yep.

11 **Q.** And so you see that this is too much for most users. So
12 more than 50 percent presumably. Would that be substantial
13 limitation of access?

14 **A.** I do not think that from this fact alone I would conclude
15 that there's been substantial harm to competition or
16 substantial limitation to access in the relevant sense.

17 **Q.** Okay. Now, you define foreclosure in your report, I
18 believe, as a significant impairment of rivals' ability to
19 offer their product to users. Do you recall that?

20 **A.** Yeah. I think there's a second half to that sentence as
21 well, but that's the first half.

22 **Q.** Okay. And if most users cannot get to the product, isn't
23 that significant impairment?

24 **A.** Again, I think it depends on looking at it holistically.
25 If a competitor goes out and does something that prevents most

1 consumers from accessing their rivals, that's something that
2 certainly in many circumstances could be --

3 Q. Sir, I'm asking specifically about this slide in this
4 instance where Google itself says that its own unknown sources
5 install flow prevents most users from switching. Is that
6 significant impairment or not?

7 A. No, it's not, and I'm happy to tell you why not if you
8 would like.

9 Q. Now, you've not relied on this document when you opined in
10 this case; correct?

11 A. I can't say for sure. I looked at a lot of documents and
12 I've seen documents similar to this that make a similar point,
13 but I don't recall for this exact document.

14 Q. Another document that you did not rely on was the
15 deposition testimony from Mr. Morrill from Amazon that the jury
16 has seen, but you have since read it I assume; correct?

17 A. I can't say for sure sitting here right now whether
18 I've -- read his deposition testimony you said?

19 Q. Yes, which was played in court.

20 A. Yes, I wasn't here when that was played, and the
21 transcripts I think that I saw did not have transcripts of
22 those things that were played on video; but, in any case, I
23 can't recall reading that.

24 Q. Okay. Mr. Morrill was asked and testified that 11 percent
25 of the people who were trying to download the Amazon Appstore

1 as of August 2020 actually went through the unknown sources
2 install flow and completed the download. That's an 89 percent
3 drop. Is that substantial limitation?

4 **A.** Could you just say the question one more time?

5 **Q.** Sure.

6 Mr. Morrill testified that 11 percent of the folks who
7 tried to download the Amazon Appstore through the unknown
8 sources install flow actually succeeded, meaning the other
9 89 percent were deterred during the process.

10 Is that substantial limitation on access to sideloading or
11 direct downloading as a means of distribution?

12 **A.** I think clearly not, and I'm happy to tell you why not if
13 you would like.

14 **Q.** Now, I want to talk a little bit about, while we're at it,
15 you have Slide 51. Here you talk about evidence that people
16 know how to sideload; right?

17 **A.** Yes.

18 **Q.** And this is from the same data that was discussed here
19 with Dr. Qian and includes Chromecast and TVs and other things;
20 correct?

21 **A.** Correct.

22 **Q.** And this data also has I think more than a third
23 categorized as coming from an unknown country; correct?

24 **A.** That's correct. I would note that that doesn't affect
25 anything that's on this chart because --

1 Q. Well, you have no idea how it affects what's on the chart
2 because if the 34 percent was added to one country or another,
3 you have no idea what the effect would be; correct?

4 A. Sorry. I just meant in the sense those data points are
5 not included in this figure. That's all I meant.

6 Q. I see. So you just excluded the third that is unknown?

7 A. When I was plotting things by country, I did not and could
8 not include things for which Google didn't know what country --

9 Q. I think, yes, you excluded the 34 percent that are --

10 A. Yes, definitely.

11 Q. I apologize.

12 Now, even with these deficiencies, the data here shows low
13 percentages of devices where even one app has been allowed for
14 unknown sources in major western economies, like Japan and the
15 U.S. and the U.K. and Germany; correct?

16 A. We can see the numbers. I think it's 19 percent in the
17 U.S.

18 Q. And 19 percent in the U.S. means that 81 percent of the
19 phones in the U.S. have never allowed unknown sources for
20 anything; correct?

21 A. Correct.

22 Q. And the same -- it's even higher for Japan, if you recall?

23 A. The number who have not accessed it is higher.

24 Q. Correct. It's 85 percent?

25 A. Yes, and that's consistent with my recollection.

1 Q. And it's about 75 or 76 percent in Germany and the U.K.?

2 A. That is also consistent with my recollection.

3 Q. But it's very high in places like Yemen and Iran; correct?

4 A. As well as all the places on this map that you can see.

5 Q. All right. Now, you understand that to download something
6 from a third-party store, you would need to allow unknown
7 sources for the browser to download that app store; correct?

8 A. Let me make sure I'm parsing -- maybe you could say the
9 question one more time. I want to make sure I get it right.

10 Q. Sure.

11 If I want to download an app from the Amazon Appstore, I
12 first need to download the Amazon Appstore from the web;
13 correct?

14 A. If it was not preinstalled. I think the only thing to
15 clarify is it could be preinstalled and things would be
16 different. If I could just say, if it was preinstalled, you
17 would not need to activate unknown sources; but if not, yes,
18 you would need to download it from a website.

19 Q. And for that I would need to allow unknown sources for the
20 browser?

21 A. Yes.

22 Q. And then I would need to go into the Amazon store and
23 download an app from the Amazon store and need to allow unknown
24 sources for the Amazon store; correct?

25 A. I believe so, yes. There have been some changes to how

1 the app store flow works over time. So certainly at some point
2 in time that was a correct description.

3 Q. Sir, that is, Mr. Kleidermacher testified here that this
4 is the process today. Do you have any reason to doubt that?

5 A. Oh, no. I trust him.

6 Q. Okay. So for download from a third-party app store you
7 would need to allow unknown sources for two sources, not one;
8 correct?

9 A. Yes.

10 Q. And you represented no data about how many devices have at
11 least two unknown sources enabled; correct?

12 A. Correct.

13 Q. And you understand that those numbers would by definition
14 be lower than what we're seeing here; correct?

15 A. I do, yes.

16 Q. And you understand, for example, that even though you
17 represented that 90 percent of U.S. devices have allowed at
18 least one app to install unknown sources, only 3 percent of
19 U.S. Android phones actually have an app store that was
20 directly downloaded from the web?

21 A. I think that's the right number, yes.

22 Q. Okay. And in the face of all this evidence, it is your
23 opinion that the unknown sources install flow does not
24 substantially limit access of developers and users to direct
25 downloading as a distribution channel; correct?

1 **A.** That is correct.

2 **Q.** Okay. Let's talk about other conduct at issue.

3 As an economist, I think you testified today you need to
4 look at conduct holistically; correct?

5 **A.** Holistically and also down in the details individually.

6 **Q.** So you need to look both at each conduct on its own and
7 holistically everything together; correct?

8 **A.** Correct.

9 **Q.** Now, you know, for instance, that Project Hug,
10 Project Banyan, and RSA 3.0 were designed as complementary
11 efforts to protect risks to the Google Play Store; correct?

12 **A.** I think that's something that I recall at least somebody
13 in Google saying at some point in time.

14 **Q.** That somebody was Mr. Jim Kolotouros?

15 **A.** I take your word for it.

16 **Q.** Okay. And you have no reason to doubt that these three
17 projects were designed together as complementary project to
18 protect against a single identified risk to the Google Play
19 Store; correct?

20 **A.** No. What I would say is I have no reason to doubt that he
21 said that, he put that on his slide.

22 **Q.** Okay. That's good enough.

23 Now, you actually haven't looked at these three -- at
24 three projects together, did you?

25 **A.** Project Hug, Project Banyan, and RSA 3.0?

1 Q. Correct.

2 A. Well, Project Banyan is somewhat special in that because
3 it never happened. It was never implemented. And so the focus
4 of my analysis was on things that actually happened in the real
5 world and what was their impact. So I did not look in detail
6 at Project Banyan.

7 Q. And you did not look at Project Hug and Project RSA .33 --
8 3.0 together either, did you?

9 A. I certainly did.

10 Q. You certainly did. All right.

11 Now, you stated in your direct that you expected a
12 developer like Amazon, for instance, to match the Hug payments,
13 correct, if it were interested?

14 A. No, I don't think that's -- I don't think I used the word
15 I would expect.

16 Q. I think you said you would expect that they could match;
17 correct?

18 A. Yes, I expect that they could, absolutely.

19 Q. Okay. And to understand -- sorry.

20 You understand that to attract someone like, for instance,
21 Activision Blizzard King, ABK, to a store like Amazon with
22 under 1 percent share, Amazon would need not only to match
23 whatever Google paid in Hug payments, it would also need to
24 compensate ABK for the loss of sales from not being on
25 Google Play, correct, if it wanted it exclusively?

1 **A.** Yes, if they wanted it exclusively, yes, I think the
2 nature of competition is you want to pay somebody not to be in
3 somebody else's store, you're going to have to compensate them
4 to do that.

5 **Q.** And when you're under 1 percent and you need to compensate
6 for somebody who's at 83 percent, you need to compensate them
7 with a lot of money; correct?

8 **A.** I'm sure this would be a lot of money no matter what. The
9 1 percent, I think the whole point might be that would get
10 bigger if you had these great exclusive apps.

11 **Q.** Excellent. My point exactly.

12 And you never considered how those things are exacerbated
13 by the fact that Amazon to grow, needs to go through the
14 unknown sources install flow; correct? You didn't consider
15 those together?

16 **A.** I considered the unknown sources flow and the impact of
17 that on these app stores, and that was part of my analysis
18 considering all of these things as context.

19 **Q.** Sir, you have no place in your report or even in your
20 testimony today where you said: Here's what it would look like
21 for an app store to actually match the Hug payments and go
22 through the unknown sources install flow to actually grow using
23 this exclusive content that they just paid hundreds of millions
24 or billions for; correct?

25 **A.** Yeah, I -- certainly, I did not calculate the specific

1 thing that you just described.

2 **Q.** Okay. And you also did not present any testimony on how
3 that would be further exacerbated by the fact that if Amazon
4 wanted to be exclusive or even wanted to be alongside the
5 Play Store out of the box, as you called it, it would have to
6 somehow compensate the OEM for the RSA 3.0 payments that
7 they're getting from Google to keep Google Play exclusive;
8 right? You did not look at that holistically either?

9 **A.** I'm not sure that I would agree with that. I can tell you
10 how I looked at that if you like.

11 **Q.** That was not in your testimony today; correct?

12 **A.** What would happen -- what was the impact of the RSA 3.0 on
13 Amazon and similarly situated app stores' ability to get
14 preinstalled is precisely what I was looking at in that
15 analysis.

16 **Q.** No, no, sir. I'm asking you: Did you look at that
17 alongside the fact that to grow, they need to somehow jump over
18 the hoops of Hug and the fact that they need to be sideloaded
19 and the fact that they need to deal with RSA 3.0? They need to
20 deal with all of this?

21 **A.** I think, again, that analysis was alongside my
22 consideration of all of these things. I did not -- I don't
23 know exactly what you have in mind, but I didn't do some
24 specific analysis that kind of added those things up in a
25 particular way.

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1 **Q.** I hear you. Let's talk briefly about this Project --

2 **THE COURT:** All right. Let's take our afternoon
3 break. We'll be back at a little bit after 2:15.

4 **THE CLERK:** All rise.

5 (Recess taken at 1:58 p.m.)

6 (Proceedings resumed at 2:20 p.m.)

7 (Proceedings were heard in the presence of the jury:)

8 **THE COURT:** Okay. Go ahead.

9 **MR. EVEN:** Thank you, Your Honor.

10 **BY MR. EVEN:**

11 **Q.** So, Professor Gentzkow, I want to quickly talk first about
12 Project Hug.

13 You know that Project Hug was intended to prevent, as
14 Mr. Koh testified, contagion whereby once top developers took
15 their gaming content off Google Play, other developers would
16 potentially follow suit. You've seen that testimony?

17 **A.** I think I have seen that testimony, yes.

18 **Q.** You never mentioned a contagion risk in your testimony
19 today or in your report; correct?

20 **A.** I don't believe I used the word "contagion."

21 **Q.** And I'd like to only focus about the Project Hug deals
22 with ABK and Riot, if I may.

23 And it's your opinion in this case that there's no
24 evidence that you find convincing or credible that Google used
25 Project Hug to buy off potential entrants; correct?

1 A. That is correct. And buy off potential entrants in a
2 specific sense but, yes.

3 Q. Okay. Now, you understand that ABK and Riot, in fact,
4 signed Hug agreements and never opened a store; correct?

5 A. That's correct.

6 Q. And your expertise is not in assessing the credibility of
7 evidence; correct?

8 A. The credibility of what, sir?

9 Q. Of evidence, of testimony that the jury has heard, that's
10 not something you learned at Harvard?

11 A. My expertise is certainly in assessing the credibility of
12 evidence. I wouldn't say I have any particular expertise in
13 assessing testimony in a legal sense or anything like that.

14 Q. Okay. Notwithstanding the testimony of Mr. Koh and
15 Ms. Kochikar and Mr. Harrison here and the warnings that went
16 to the Business Council, your view is that there's no credible
17 evidence in this case that Project Hug and these deals were an
18 example of Google buying off competitors; correct?

19 A. That's correct. And as I said, they are examples of
20 Google giving a deal to those competitors, to those firms, that
21 certainly changed their incentives to put their apps in Play --

22 Q. Sir --

23 A. -- but I would not characterize that as buying off.

24 Q. In fact, you told -- your view is that even if there's a
25 formal agreement that says, "You, potential competitor will

1 take hundreds of millions of dollars in exchange for not
2 entering this market," that is at most an example of something
3 that could potentially be evidence in favor of buying off a
4 competitor; right?

5 **A.** I think it certainly could potentially be evidence. All
6 that qualification stands for is, in any given situation, we
7 need to look at the details carefully to see what we're talking
8 about.

9 **Q.** In other words, even in your view as an economist, even
10 the existence of that letter, an explicit agreement, that says
11 "Here's \$360 million. You commit not to enter this market,"
12 you say this still would not be enough for you to find that
13 Google was buying off competitors?

14 **A.** I did not say that. I said that I would need to look at
15 the details, and we need to be clear about what happened.

16 **Q.** Sir, your counsel can ask.

17 You said at the time that this could potentially be, but
18 you would need to look at other evidence in addition; correct?

19 **A.** I can't conclude that anything is anticompetitive without
20 understanding exactly what circumstances we're talking about
21 and looking at the evidence.

22 **Q.** That's exactly the problem, sir.

23 Let's talk quickly about RSA 3.0. RSA 3.0, you had some
24 back and forth with Mr. Raphael about whether you should
25 include or exclude Samsung in the way you look at it; correct?

1 **A.** Yes.

2 **Q.** Now, you understand that as part of the three-project
3 program, RSA 3.0 was designed to target non-Samsung OEMs;
4 correct?

5 **A.** I understand that several of those Google documents
6 suggest that that program was focused on non-Samsung OEMs, yes.

7 **Q.** And Google had another project for Samsung; right?
8 Project Banyan?

9 **A.** Google had that project, which never happened as we said.

10 **Q.** I understand, sir, but you understand that Google had two
11 projects, one for non-Samsung and one for Samsung; correct?

12 **A.** Yeah. My goal with that is not to assess the success --

13 **Q.** Sir, it's a simple question. That is correct?

14 **A.** Correct.

15 **Q.** Let's proceed.

16 Now, RSA 3.0 is a deal where Google paid 20 to 25 percent
17 to OEMs -- 20 to 25 percent of Play and sometimes Search
18 revenue to OEMs to have Play as the only store on their phones;
19 correct?

20 **A.** I wouldn't quite agree with that. It paid that revenue
21 for a set of things that the OEMs were asked to do of which the
22 thing you mentioned is one.

23 **Q.** I see. So they paid it for exclusivity for Play plus
24 other things?

25 **A.** Plus security updates, plus letter upgrades, and so on as

1 I said.

2 Q. Okay. Now, your view is that there's no evidence that an
3 equally efficient competitor in app distribution would not have
4 been able to profitably offer similar app store revenue sharing
5 terms to OEMs as those that were offered under the premier tier
6 terms offered in RSA 3.0; correct?

7 A. I've seen no such evidence.

8 Q. RSA 3.0 comes on top of a MADA; correct?

9 A. I think in order to sign RSA 3.0, you need to have signed
10 the MADA, if that's what you mean.

11 Q. And so while Google makes RSA 3.0 payments to gain
12 exclusivity, an equally efficient competitor paying an OEM the
13 same amount of money could at most buy the right to be placed
14 on the phone next to the Google Play Store; correct?

15 A. Well, I think if an OEM was signing the MADA, part of what
16 they're agreeing to in the MADA in exchange for what they're
17 getting is to put Play on the phone. So if they've signed the
18 MADA, what you said would be correct.

19 Q. And so at that point if Google payed somebody a billion
20 dollars to be exclusive, Amazon comes and says "Here's a
21 billion dollars," all they get is to be next to the Google Play
22 Store on that phone; correct?

23 A. Basically, yes, unless they were convinced not to have the
24 MADA.

25 Q. Okay. Now, you understand that to be exclusive on the

1 phone then, an equally efficient app store would need to
2 compensate the OEM not only for the lost RSA 3.0 revenue from
3 Google but also the loss of all the Google apps and the Google
4 APIs that come with the MADA; correct?

5 **A.** It depends what we're asking them to do. If they want to
6 be on the phone, no.

7 **Q.** If they want to be exclusive on the phone, they need to
8 compensate the OEM for both RSA 3 and the MADA; correct?

9 **A.** Yes. The statement that I made that you quoted from my
10 report was not about exclusivity.

11 **Q.** Sir, I'm just asking the question.

12 That is how this will operate as an economic matter in the
13 real life if somebody wanted to be an exclusive store on a
14 phone; correct?

15 **A.** I completely agree about the exclusive case, yes.

16 **Q.** Okay. Now, you understand that the app store developers
17 do not typically have a collection of APIs that could replace
18 Google's APIs; correct?

19 **A.** Correct.

20 **Q.** And they don't have something to replace YouTube or
21 Google Maps?

22 **A.** No, most of them don't.

23 **Q.** They just have a store; right?

24 **A.** Correct.

25 **Q.** And they also don't typically have a search engine the

1 size of Google Search that would replace the Search revenue
2 that Google pays under RSA 3.0; correct?

3 **A.** Correct.

4 **Q.** Now, you understand that RSA 3.0 agreements were signed
5 with Xiaomi, Oppo, and Vivo?

6 **A.** Yes.

7 **Q.** And Xiaomi, Oppo, and Vivo received the highest rates
8 available under RSA 3.0; correct?

9 **A.** They were certainly the highest of the ones that
10 Dr. Bernheim showed, and my recollection is consistent with
11 them being the highest overall.

12 **Q.** And you understand that Oppo, Xiaomi, and Vivo are the
13 three OEMs that have the biggest stores alongside Samsung in
14 terms of app downloads; correct?

15 **A.** I think that's right.

16 **Q.** And you understand that Professor Bernheim showed
17 yesterday that each one of those now have 50 to 60 percent of
18 their new devices -- well, not now -- back in '21 or '22 they
19 already had 50 to 60 percent of their devices being subject to
20 the premier tier with Play exclusively on their phone; correct?

21 **A.** Yes. In terms of those new activations, yes.

22 **Q.** All right. So let's talk about Samsung a little bit.

23 Samsung phones represent nearly 40 percent of Android
24 phones; correct?

25 **A.** Worldwide.

1 Q. Worldwide; is that right?

2 A. I believe so, yes.

3 Q. And the Galaxy Store is, therefore, nearly 40 percent of
4 Android phones; correct?

5 A. Yes.

6 Q. And the Galaxy Store, nonetheless, accounts for less than
7 1 percent of downloads while the Google Play Store is about
8 83 percent of downloads; correct?

9 A. I don't know those exact numbers, but I trust you, yes.

10 Q. All right. And you believe that Samsung having 40 percent
11 of Play's footprint but only 1 percent of its download reflects
12 competition on the merits?

13 A. What I said is the choice of users who have both of those
14 things side by side to use the Google Play Store far more than
15 the Samsung Galaxy Store reflects their perceived value from
16 the Play Store being higher.

17 Q. Sir, what you're describing is competition on the merits;
18 correct?

19 A. Yes. I just mean in that specific case of that specific
20 choice.

21 Q. I understand. And you gave an example. You said, "You
22 know, maybe we have a Walmart and they're looking over at a
23 convenience store and a lot more people would come to the
24 Walmart"; correct?

25 A. That is something I said, yes.

GENTZKOW - CROSS / EVEN

1 Q. And in that analogy I understand that Samsung is the
2 bodega.

3 A. I think you could apply that analogy to Samsung.

4 Q. Okay. You understand that Samsung -- there was a time
5 when Samsung tried to get some exclusive games; correct?

6 A. I know that they got an exclusive on Fortnite's game, and
7 it seems consistent with my recollection that they may have
8 tried to get other exclusives, yes.

9 Q. Okay. And since that, you're not aware of any major games
10 that they got since 2018; correct?

11 A. I'm not aware of any major exclusives.

12 Q. And maybe it has something to do with it, but just after
13 they got that one game, Google launched both Project Hug that
14 paid -- that paid game developers not to go exclusive on any
15 store, including Samsung, and Project Banyan; correct?

16 A. Can you say the question again?

17 Q. Sure.

18 Just after Samsung landed Fortnite on an exclusive basis,
19 immediately Google launched both Project Hug and
20 Project Banyan; correct?

21 A. I don't know the exact timing, but I agree that those
22 things followed the launch of Fortnite. They were after.

23 Q. Now, did you hear or read the testimony of Mr. Rosenberg
24 at trial?

25 A. I read some of it.

1 Q. You understand that Mr. Rosenberg testified at this trial
2 that under the proposed Project Banyan deal, Google Play Store
3 and Samsung would no longer compete on commercial terms for
4 developers?

5 A. If you tell me that was his testimony, I'll believe you.

6 Q. You did not analyze whether Project Banyan would have been
7 anticompetitive had it been completed; correct?

8 A. Correct.

9 Q. And I gather that without further analysis, you cannot say
10 one way or another whether an agreement not to compete between
11 a store with 80 percent and the second-largest store in the
12 ecosystem would be anticompetitive? You just don't know?
13 There's more evidence --

14 A. It's the kind of thing that would very often be
15 anticompetitive or could be, but I would need to analyze it
16 like anything else.

17 Q. Now, you read that Mr. Rosenberg told his colleagues even
18 before Project Banyan was abandoned that certain RSAs are in
19 flight as an alternative arrangement to Banyan?

20 A. I don't recall that -- say it one more time for me. I'm
21 sorry.

22 Q. Do you recall that Mr. Rosenberg said that even before
23 Banyan was canceled, he said, "Don't worry. We have other RSA
24 agreements in flight to address the same issue"?

25 A. Again, I don't recall that exact testimony, but I'm sure

1 you've got it right.

2 **Q.** Do you recall the testimony that he said that no RSA
3 should be signed with Samsung unless Google could secure
4 confidence, quote/unquote, that Samsung would not lower its
5 fees to developers?

6 **A.** Likewise, I take your word for it.

7 **Q.** Okay. Would an agreement between Play and Galaxy not to
8 lower the fees to developers be anticompetitive, or is that,
9 too, something you need more evidence to look into?

10 **A.** And generally speaking, agreements not to keeping in price
11 are very often anti competitive.

12 **Q.** You can't say one way or another?

13 **A.** It's a general principle. I would say as an economist,
14 I'm not going to weigh in on anything exactly what we're
15 talking about and thinking about it carefully.

16 **Q.** I hear you.

17 So following Mr. Rosenberg's admonitions, Google did, in
18 fact, sign an \$8 billion RSA agreement with Samsung? You
19 understand that; right?

20 **A.** Yes.

21 **Q.** Since Project Banyan was in motion and through today,
22 Samsung has not pursued any additional exclusive content beyond
23 Fortnite; correct?

24 **A.** Not that I'm aware of.

25 **Q.** And since Project Banyan was in motion and through today

1 Samsung has not lowered its rev share to developers, has it?

2 **A.** The question was has Samsung lowered its rev share to
3 developers?

4 **Q.** Correct.

5 **A.** I'm aware of a number that Samsung has negotiated rev
6 share rates that are different from its published rates, and I
7 have no knowledge how those have changed over time.

8 **Q.** Now, you've not considered any of this testimony to
9 determine whether Samsung's almost nonexistent competitive role
10 in app distribution has more to do with the \$8 billion it
11 receives from Google and maybe less to do with its competition
12 on the merits?

13 **A.** I have analyzed that question, looked at the data, applied
14 the analysis we talked about, and reached my conclusion.

15 **Q.** If we're talking about the analysis in your direct, what
16 you said is you've seen clear evidence that Samsung is trying
17 to grow because it grew from 0.92 percent to 0.94 percent, and
18 back in 2018 before all this happened it signed Fortnite?
19 That's the evidence you looked at?

20 **A.** Those were two things that I said were economic evidence
21 that don't look consistent with them not competing.

22 **Q.** Sir, if the jury concludes that Google and Samsung do, in
23 fact, have an understanding or a handshake deal that Samsung
24 would not compete with Play, would you consider that
25 anticompetitive?

GENTZKOW - REDIRECT / RAPHAEL

1 **A.** I think, again, as I said, it would depend on what we mean
2 by that, what exactly your counterfactual is, but I can
3 certainly think of scenarios where the jury could conclude some
4 kind of agreement, if an agreement was reached, that certainly
5 could be anticompetitive.

6 **MR. EVEN:** No further questions. Thank you.

7 **THE COURT:** Okay. Brief redirect.

8 **MR. RAPHAEL:** Very brief, Your Honor.

9 **REDIRECT EXAMINATION**

10 **BY MR. RAPHAEL:**

11 **Q.** Mr. Even asked you some questions about considering
12 RSA 3.0 and sideloading all together. Do you recall that?

13 **A.** I do, yes.

14 **Q.** So if the Amazon Appstore got preloaded on Android phones,
15 would anyone need to go through sideloading to download it?

16 **A.** No, they would not.

17 **Q.** And Mr. Even asked you some questions about Amazon or
18 another app store getting -- being the exclusive on any
19 particular phone?

20 **A.** Yep.

21 **Q.** If Amazon was on the -- preinstalled on an Android phone
22 next to the Play Store, is it your opinion that that gives them
23 an opportunity to compete?

24 **A.** Absolutely, yes.

25 **Q.** And Mr. Even asked you a bit about Samsung and the Revenue

PROCEEDINGS

1 Sharing Agreements. Do you recall that?

2 **A.** I do, yes.

3 **Q.** At the time that Epic entered into an agreement with
4 Samsung to have Fortnite in the Galaxy Store, was Samsung
5 getting a Revenue Share Agreement with Google?

6 **A.** It was, yes. Samsung has had Revenue Sharing Agreements
7 with Google for quite a long time. Since 2011 or so I believe.

8 **MR. RAPHAEL:** No further questions, Your Honor.

9 **THE COURT:** Okay. You may step down.

10 (Witness excused.)

11 **THE COURT:** Who do we have next?

12 **MR. ROCCA:** Google calls Professor Catherine Tucker.

13 (Pause in proceedings.)

14 **MR. ROCCA:** Your Honor and Ms. Clark, to expedite
15 things, the parties have agreed that three summary exhibits
16 reflecting Ms. Tucker's analysis can be admitted at this time.
17 I will wait till you're ready, Ms. Clark.

18 **THE CLERK:** Please raise your right hand.

19 **CATHERINE ELIZABETH TUCKER,**

20 called as a witness for the Defendant, having been duly sworn,
21 testified as follows:

22 **THE WITNESS:** Yes, I do.

23 **THE CLERK:** Thank you. Please be seated.

24 Please state your full name for the Court and spell your
25 last name.

TUCKER - DIRECT / ROCCA

1 **THE WITNESS:** My full name is Catherine Elizabeth
2 Tucker, and my last name is spelled T-U-C-K-E-R.

3 **THE CLERK:** Thank you.

4 **MR. ROCCA:** And, Ms. Clark, Google offers into
5 evidence the following exhibits: Exhibit 7002, Exhibit 7006,
6 and Exhibit 7008.

7 **MR. BORNSTEIN:** There's no objection, Your Honor.

8 **THE COURT:** Okay. Those are admitted.
9 (Trial Exhibits 7002, 7006, and 7008 received in
10 evidence.)

11 **DIRECT EXAMINATION**

12 **BY MR. ROCCA:**

13 **Q.** Good afternoon.

14 **A.** Good afternoon.

15 **Q.** Can you please reintroduce yourself to the jury?

16 **A.** Yes. I'm Catherine Elizabeth Tucker.

17 **Q.** Where do you work?

18 **A.** So I am the Sloan Distinguished Professor at MIT,
19 otherwise known as the Massachusetts Institute of Technology.

20 **Q.** Professor Tucker, your accent doesn't sound like you're
21 from Massachusetts. Where are you from originally?

22 **A.** No. I grew up in the U.K., and I did my undergraduate
23 degree at Oxford University.

24 And then I ran away to Stanford University where I did my
25 Ph.D. in economics, and much like every other professor with a

1 specialization in industrial organization.

2 Q. And do you focus on any particular area of economics?

3 A. Yes. So I look at what changes about business and how
4 companies compete when we move away from the physical world to
5 the digital world.

6 Q. And is that a recognized field in economics?

7 A. Yes, it is. It's a growing field, and one of the things
8 I'm proud of is that I lead the group of economists who study
9 digital economics and economics of artificial intelligence as
10 part of the big American organization of economists, which is
11 called the MBR.

12 Q. Has anyone outside of the academic context asked you to
13 share your research and your perspective in these areas?

14 A. Yes. So one of the things I was asked to do was I was
15 asked by the Federal Trade Commission, which is one of the
16 government authorities in the U.S. that looks at competition,
17 and I was asked to be the keynote speaker at a series of
18 meetings they had which were talking about how competition
19 economics changes when things go digital.

20 Q. Professor, in connection with your research, have you ever
21 received funding from any organizations?

22 A. Yes, I have.

23 Q. What's your biggest funder so far?

24 A. It would be the National Science Foundation and also the
25 Sloan Foundation.

TUCKER - DIRECT / ROCCA

1 **Q.** Professor, do technology companies ever provide any
2 funding for your research?

3 **A.** Yes, they do.

4 **Q.** Has Google?

5 **A.** Yes, they have.

6 **Q.** When was the last funding that you received from Google
7 for a research project?

8 **A.** That would be from Google 11 years ago; and then from an
9 industry association that Google was part of, I think that
10 would be about 8 years ago.

11 **Q.** Professor, how are you compensated for your time in this
12 matter?

13 **A.** So I am paid \$1400 an hour, and then I receive a
14 percentage of the billings of my staff who assists me.

15 **MR. ROCCA:** Your Honor, Google offers Professor
16 Catherine Tucker of MIT as an economist with a particular focus
17 on digital markets.

18 **MR. BORNSTEIN:** No objection, Your Honor.

19 **THE COURT:** Okay. She's qualified on that topic.

20 **BY MR. ROCCA:**

21 **Q.** Now that you've told the jury who you are, why don't you
22 tell them why you're here. What was your assignment?

23 **A.** Yes, of course. So I was -- I'm here and my assignment
24 was to look at plaintiff's experts' market definition and also
25 their conclusions about monopoly power.

1 Q. Professor, have you prepared a slide to help explain your
2 opinions in this case?

3 A. Yes, I have.

4 Q. Okay. Let's start with your first opinion.

5 Can you please read it and explain it briefly at a high
6 level?

7 A. Oh, yes. So when it comes to product market definition, I
8 believe that Dr. Bernheim and Dr. Tadelis have got it wrong in
9 that if you look at the product which Android and the
10 Play Store offer, which is facilitating digital interactions
11 between app developers and app users, then Google's competing
12 with Apple among others.

13 Q. So let's start with market definition. What is market
14 definition to an economist like yourself?

15 A. So market definition is an important first step when
16 you're trying to understand about conduct. And by "conduct" I
17 mean all the things that we just heard Dr. Gentzkow talking
18 about.

19 And what market definition allows you to do is by
20 understanding what reasonable substitutes exist for consumers,
21 it then allows you to start to evaluate, well, is any conduct
22 you see in the market something which is creating value or
23 potentially destroying value.

24 Q. Professor, you just said "reasonable substitutes." Can
25 you describe to the jury how an economist looks to whether

TUCKER - DIRECT / ROCCA

1 something is a reasonable substitute or a meaningful
2 alternative service or product?

3 **A.** Yes, of course. So I think actually Dr. Bernheim
4 described it well yesterday in that what we do as economists is
5 we're trying to understand, well, you know, if it was the case
6 that prices go up or quality goes down in some way, you know,
7 will consumers be able to reasonably be easily switched to
8 something, and that's really what we're doing when we're
9 thinking about market definition.

10 **Q.** Professor, you've already mentioned Professor Bernheim.
11 Did you have a chance to listen to Professors Bernheim and
12 Tadelis testify about the relevant product market?

13 **A.** Yes, I did.

14 **Q.** Do you agree with them?

15 **A.** No, I don't.

16 **Q.** Why not?

17 **A.** Well, at the heart of it, I mean, just at the highest
18 level, what they've done is they've carved up a single, really
19 quite easy to understand market into lots of little pieces,
20 which allow them in some ways use to, you know, carve off
21 things but in a way which doesn't make sense. And, you know, I
22 can explain what I think they got wrong.

23 **Q.** I'd like to show you the slide that Professor Bernheim
24 showed yesterday to explain his relevant market. Did you see
25 this yesterday?

1 **A.** Yes, I did.

2 **Q.** And then today Professor Tadelis offered this market
3 definition. Did you see this?

4 **A.** Yes, I did.

5 **Q.** So you have combined them into a consolidated slide with
6 Professors Bernheim and Tadelis' relevant markets. What was
7 your reaction to seeing this information?

8 **A.** Well, when you look at it, what you see is that really in
9 quite a convoluted and complex way, making sure they draw these
10 small red lines and circles and other odd shapes in a way which
11 means that Apple is excluded from the market.

12 And my opinion is that this was a convoluted process; it's
13 just not correct. And that when you look at both the facts and
14 data, it's very much the case that Android and the Play Store
15 is competing with Apple.

16 **Q.** Professor, Dr. Bernheim indicated that it's important to
17 identify the needs and desires of the buyers of a service to
18 help define the parameters of a market. Do you think his
19 approach to relevant market here achieved that goal?

20 **A.** So I utterly agree that you need to think about the needs
21 and desires when you're thinking about the product market, but
22 my opinion is he got the needs wrong. In the real need in this
23 market and what this market is about is that app developers and
24 app users want their interactions, digital interactions, to go
25 well.

1 Q. Do you have a basic demonstrative to explain how you see
2 these interactions between app users and app developers?

3 A. Yes, I do.

4 Q. Okay. What are you showing to the jury?

5 A. Here I'm just showing that actually there's a far more
6 simple way than all these convoluted red lines of thinking
7 about this market, which is that you have app developers on the
8 one hand and app users on the others; and what Google and the
9 Play Store is doing, the need they're fulfilling, is making
10 sure that interactions between these two groups go well.

11 Q. And you've used the term "interactions" a few times. What
12 types of interactions are you referring to?

13 A. Oh, so when I'm talking about interactions, I'm talking
14 about digital transactions, both paid and unpaid.

15 Q. And where does Google Play fit into these interactions?

16 A. So Google Play is a key way that Android is making sure
17 that these interactions between users and developers are going
18 well. That's what I mean when I say "facilitation."

19 Q. Professor, as an economist, what types of information did
20 you review to determine that this is the appropriate way to
21 look at the product market in this case?

22 A. So the two big sources of information. The first was I
23 read a lot of documents, both from Google and its competitors
24 and third parties; and then I also looked at a lot of data.

25 Q. Professor, let's start with what you found in Google's

1 documents.

2 You have a simple demonstrative here. What is this?

3 **A.** All right. So this is really summarizing what I saw when
4 reading Google's documents about how it thought about Play and
5 its relationship to Android and what it was doing.

6 And what it's saying here is that Play exists to make
7 Android better. I think Dr. Bernheim used the language of
8 "differentiation" yesterday, but think of it as the idea is
9 that Play is helping Android compete by making it better by
10 making these interactions between app users and app developers
11 go better.

12 **Q.** Professor Tucker, what are some examples of the way in
13 which Google Play allows Android to differentiate itself from
14 competition?

15 **A.** Well, I'll just give you some examples from both sides
16 maybe. But, you know, as an app user, it allows me to easily
17 find lots of apps, read lots of reviews, potentially download
18 the apps, see if I like it; and then if I go and pay for
19 something in the app, it's got, you know, a nice billing
20 system. I can get refunds. There's all this value being
21 created that way.

22 And then when it comes to app developers, well, of course,
23 what's great about Play for them is a lot of users. You can
24 get your product out there. For the app users, they can
25 actually play around with it, see if they like it. And then,

1 again, they could handle billing and other things which, you
2 know, is useful for a developer.

3 **Q.** Professor, do you have an opinion as to whether Apple
4 considers the availability of apps on iOS as central to the
5 ecosystem experience on iOS?

6 **A.** Yes.

7 **Q.** And have you seen any evidence from Apple that it views
8 the world in that way?

9 **A.** Yes, I have. This is actually a screenshot of an ad put
10 out by Apple, and I just want to highlight what that ad is
11 saying is: Look, we have apps. In other words, Apple is
12 saying: A key reason to be choosing us is because we have
13 these apps for you.

14 **Q.** Professor, have you seen any evidence from Apple that it
15 views Google as a competitor when it comes to app stores?

16 **A.** Yes, I have. So when I read Google -- sorry -- when I
17 read Apple documents, you know, there's some striking things
18 you see. You see in big words "Competition" and then they list
19 the Google Play Store. And then when they're looking at the
20 Google Play Store, they're like, "Oh, let's just compare
21 ourselves. Are we doing as well as them? You know, are we
22 competing?" And so you see that in the Apple documents.

23 **Q.** Why does it matter to you as an economist that Apple
24 considers Google to be its competitor?

25 **A.** Well, it matters because when you're trying to understand

1 what firms are competing and, therefore, what are reasonable
2 substitutes or alternatives, it matters when you see a
3 competitor not part of this case saying actually "We're
4 competing against Google Play. Our app stores are competing
5 against each other."

6 **Q.** Now, Professor Bernheim yesterday suggested in his
7 testimony that his definition of "competition" was technical
8 and different than how business people may view competition.
9 What was your reaction to that testimony?

10 **A.** Well, my memory of that testimony is Dr. Bernheim was
11 saying, yes, business people may say the word "competition,"
12 but economists, the way we use "competition," we use it a very
13 technical way and so you can ignore that, and I just don't
14 think that's correct.

15 Instead, what we usually do when we're thinking about
16 market definition is, yes, we do the data crunching the
17 numbers, but then we also look at the documents and we see:
18 Does what -- do our numbers and our analysis, qualitative
19 analysis of the documents agree?

20 It's not the case that if you ever find out that what
21 everyone's saying about this market disagrees with your
22 technical analysis, you usually go back and say "Maybe
23 something's gone wrong from my technical analysis." You
24 wouldn't just say everyone's wrong.

25 **Q.** Professor, in addition to describing each other as

1 competitors, have Google and Apple actually acted like
2 competitors in the real world when it comes to their respective
3 app stores?

4 **A.** Yes, they have.

5 **Q.** And what is this demonstrative that you've prepared for
6 the jury?

7 **A.** So this is a demonstrative which is really looking at the
8 different features that both Google and Apple have introduced
9 over time. And what I want you to see is that, you know,
10 sometimes its Apple, sometimes it's Google; but when one of
11 them release a feature, we see the other one match it again.
12 In other words, that's what we, as economists, call competing
13 on quality. They're trying to match each other in terms of
14 what they're providing.

15 **Q.** And what is the significance to you as an economist of
16 this kind of behavior in the real world?

17 **A.** We tend to see it when firms are really competitors.

18 **Q.** Besides product innovation, Professor, have Google and
19 Apple acted in other ways as competitors with respect to their
20 app stores?

21 **A.** Yes, they have.

22 **Q.** What is this?

23 **A.** So this is me looking on them competing on price. And,
24 again, as economists, when we see firms match each other on
25 price, as we're seeing in this diagram, again, that's evidence

1 they're competing. We expect competitors to match each other's
2 prices, and that's what we're seeing in this diagram.

3 Sometimes one goes first, sometimes the other one goes first,
4 but the key thing is they're trying to match each other's
5 prices.

6 **Q.** Professor, in the interest of time we're not going go
7 through each of these scenarios, but let's just focus on one.

8 The fourth set of bullets says (as read):

9 "Reduced service fee to 15 percent after the user's
10 first year of subscribing."

11 Do you see that?

12 **A.** Yes, I do.

13 **Q.** Did you see any evidence from that time period in 2017 to
14 determine how competition impacted Google's price decision?

15 **A.** Yes. So there's some independent evidence I reviewed
16 where they said, "Oh, we better match Apple." And then I think
17 even yesterday Dr. Bernheim was discussing some of the evidence
18 in his cross-examination. If you remember, it was a document
19 between Apple and Google. Google was going, "Oh, no. We
20 better match Apple if they're going to 15 percent."

21 **Q.** I wanted to ask you about Dr. Bernheim's testimony on that
22 point. He suggested that sometimes companies benchmark against
23 other companies, but that really isn't evidence of competition.
24 What was your reaction to that testimony?

25 **A.** Well, again, first of all, I think he was using that

1 really to dismiss any idea of the fact that the Apple and
2 Google are scrutinizing each other's features and quality. I
3 don't think, you know, any economist would sort of say this
4 kind of matching of pricing looks like benchmarking. That's
5 not really how we would ever use that term.

6 **Q.** Professor, just to remind the jury, who are the consumers
7 of the Google Play Store?

8 **A.** So I know you've heard this before, but it's app users and
9 app developers.

10 **Q.** Dr. Bernheim yesterday testified that these two groups of
11 buyers or users have a shared need. I think that was his
12 quote. Users who want to engage with developers, developers
13 want to engage with users.

14 Did you agree with that characterization?

15 **A.** Yes. I think that's -- I very much agree with the idea
16 that this is a shared need. This is about an interaction and
17 making those interactions go well. That's the key -- that's
18 the key product here.

19 **Q.** Professor, since there are two groups of consumers of
20 Google Play, does that mean this is a two-sided market?

21 **A.** Yes.

22 **Q.** And what is the significance of that?

23 **A.** It's significant because -- and I think you've heard this
24 before and I apologize -- that when you're bringing together,
25 as Google Play does, two groups of users, then what we usually

1 think of it becomes a platform and the job of that platform is
2 to make sure that those interactions happen and they go well.

3 **Q.** On the developer side, Professor, if Google does not
4 attract enough developers of the best apps, how might that
5 impact competition on the consumer side?

6 **A.** Well, if it's the case that you're not successful and
7 attracting the best apps, best developers, then as a consumer,
8 it just makes Google Play less attractive. Why would I want to
9 use it as an alternative if I can't get the apps that I want?

10 **Q.** Professor, does Google in your opinion face any
11 competitive risk of losing developers from Android to iOS?

12 **A.** Very much so.

13 **Q.** And how does this competition play out in your assessment?

14 **A.** Well, this is, again, something where I disagree with
15 Dr. Bernheim; but the way that competition works here is that
16 you're ultimately, if you're Google Play, trying to attract the
17 best developers to make the best apps just in order to get
18 those users on board. And to get the best apps, you need to
19 attract developer time and attention.

20 So let's imagine you're a small firm, 10 engineers. What
21 you want to do is, you know, ideally you get five engineers
22 working on the Android app, five engineers working on the iOS
23 app. That would be the ideal.

24 What is not the ideal and what Android has to compete
25 really hard to do is have a situation where you have seven

1 engineers working on the iOS app, three engineers working on
2 the Android app.

3 **Q.** Professor, have you seen data explaining why Google has to
4 compete so hard for the attention of developers compared to
5 iOS?

6 **A.** Yes, I have.

7 **Q.** What is this?

8 **A.** So this really explains why there's a danger that you're
9 not going to get the 50/50 split; in that if you look, this is
10 a graph which shows the average spending on a device from 2020
11 in the U.S., and it is telling you that the average Apple App
12 Store user is spending twice as much as the average user of the
13 Google Play Store.

14 And that just means that the Apple ecosystem is going to
15 be so much more attractive of your developer, you're going to
16 be attempted to put more engineering time there because that's
17 where you're making twice as much money.

18 **Q.** Is there evidence, Professor, of Google struggling to
19 attract the attention of developers?

20 **A.** Yes, there is.

21 **Q.** What is this demonstrative?

22 **A.** So this relates back to a Mario game, and it was really
23 important game. It was the first game, the Mario game, that
24 Nintendo was releasing, which was designed for mobile handsets.

25 And what I want you to take from this demonstrative is

1 that the super-attractive important game, it was released,
2 first of all, on Apple in December 2016, and then over -- it
3 was only three and a bit months later that it ended up being
4 launched on Android.

5 **Q.** And why is this significant in your opinion?

6 **A.** Well, it's significant because imagine you've got a kid
7 who likes Mario and their friends are playing Mario on their
8 mom's phones because their moms have iPhones but you have an
9 Android phone and your kid's not playing it, you're going to
10 remember that. That's going to be something which is going to
11 unsettle you and certainly make buying an Android phone the
12 next time pretty unattractive.

13 **Q.** Are there any other examples that you've seen from
14 testimony in this case of this phenomenon that you're
15 discussing?

16 **A.** Yes.

17 **Q.** And what is the significance of the testimony from the
18 founder of Down Dog to your opinion?

19 **A.** So this was testimony we heard a long time ago now at the
20 beginning of the trial, but it was from the developer who made
21 Down Dog, and what I want you to just remember is that he
22 testified that they launched the iOS app six months in
23 advance of releasing the Android app.

24 And, again, this is more evidence that Google just has to
25 compete really hard for this developer time and attention to

1 get their apps on Android.

2 **Q.** If Android is struggling in this regard, Professor, what
3 happens if developers do not prioritize Android? What is the
4 impact of that on users?

5 **A.** Well, imagine we don't have that prioritization. And, you
6 know, just, for example, I don't know if you remember the
7 release date of the Mario game, but just imagine that you as a
8 user, you know, you're trying to think, "Well, which phone do I
9 buy at Christmas?" You think about your child. You're like,
10 "Oh, right, I better get the one that has the Mario game."
11 That means they're going to end up having fewer users.

12 And with fewer users in place, especially losing ones who
13 are likely to spend money on your app, then that means that
14 developers have less incentive to put more engineering time in.
15 And then you get less engineering time and, again, you start to
16 get a really negative feedback loop. And that's what I mean by
17 feedback loop. It's this sort of vicious cycle if you're not
18 able to make this work.

19 **Q.** Now, Professor, are you saying that any one bad
20 interaction, like an inability to get the Mario game, is going
21 to trigger every consumer to go run out and buy a different
22 phone?

23 **A.** No. No. I mean, it's not just one thing going wrong. I
24 mean, it could be one thing, but it's really about this
25 cumulative process; that if as an Android user you're

1 constantly noticing that you have less great games, less great
2 apps, they don't work as well as your friends with iPhones,
3 cumulatively that means that when it comes to deciding "What
4 phone am I going to be buying next," you're going to remember
5 that, and it's going to drive you away from Android.

6 **Q.** But, Professor, Professor Bernheim yesterday asserted that
7 users don't switch enough for Apple to be considered a
8 reasonable substitute in this context. Did you agree with that
9 opinion?

10 **A.** No, I didn't.

11 **Q.** So before we get to switching, let's talk about new
12 buyers, which are different than switchers. Do you agree with
13 that?

14 **A.** Yes, I do. I mean, if you remember that sort of little
15 weigh scale Dr. Bernheim had, none of those considerations
16 apply for new users.

17 **Q.** Professor, have you considered how many consumers in a
18 given year are buying their very first smartphone?

19 **A.** Yes, I have.

20 **Q.** Approximately how many?

21 **A.** It's millions.

22 **Q.** Are Google and Apple competing to attract these consumers
23 so that their first smartphone purchase is an Android phone in
24 the case of Google or an iPhone in the case of Apple?

25 **A.** Very much so.

1 Q. And who are these new users, by the way?

2 A. So they're often teenagers, people getting their first
3 smartphone. Their parents have just allowed them their first
4 smartphone, so they're often teenagers.

5 Q. Professor, have you seen any data on how that competition
6 between Google and Apple is shaping up?

7 A. Yes, I have.

8 Q. Can you please describe this demonstrative?

9 A. Yes, of course. This is saying when you look at
10 teenagers, that group of new users choosing what phone to buy,
11 87 percent of them have chosen an iPhone; and then when you
12 ask them what they're going to do next, it's 88 percent of them
13 are actually choosing an iPhone.

14 Q. As an economist, are these sort of figures relevant to
15 your opinion?

16 A. Yes, and I would say that they -- they're very relevant
17 and they also explain why it is that Android and the Play Store
18 have to compete so hard against Apple.

19 Q. Now let's turn to the concept of switching. Is it
20 possible for a user to switch between an Android device and an
21 iOS device?

22 A. Yes, it is.

23 Q. Dr. Bernheim mentioned that scale that you just mentioned
24 a moment ago suggesting that it's very difficult to switch. Do
25 you agree with him?

1 A. No, I don't.

2 Q. What is this demonstrative?

3 A. Well, this demonstrative is just reminding us that
4 technology has evolved, and over time it's become easier and
5 easier to pull things out of your mobile phone because a lot of
6 things are on the Cloud.

7 And this is an example of this, which is it's a screenshot
8 actually from the Google Play Store. And if you go to the
9 Google Play Store, you will see an app by Apple that you can
10 download which allows you to take your stuff from your Android
11 phone and move it to iOS.

12 Q. Professor, what's the name of this app?

13 A. It's called Move to iOS.

14 Q. And who was the developer of this app?

15 A. This is Apple. Again, something which Dr. Bernheim's
16 world doesn't seem to allow that this could be happening.

17 Q. Is there anything else that's notable about this
18 particular screenshot?

19 A. Yes. I mean, I can't help but notice 100 million
20 downloads, number six in top three tools. I mean this is
21 something. It shows you there's real competition here and
22 people really are trying to move.

23 Q. Professor, is there a difference between potential
24 switching and actual switching?

25 A. Yes, there is.

1 Q. What is the difference? To an economist, is there a
2 meaningful difference?

3 A. There is a difference in that as economists, we're
4 interested in the potential to switch. And why is that? Well,
5 if you look at actual switching, it could just reflect that
6 everyone's happy, that people like where they are.

7 What you're really interested in is the potential to
8 switch; that is, if the price got too high or the quality went
9 down, could people reasonably easily switch to an alternative.
10 That's what we're interested in.

11 Q. Does the potential of a user switching from an Android
12 device to an iOS Apple device lead to more competition
13 between Google and Apple on their app stores?

14 A. Yes.

15 Q. Have you seen any actual switching data?

16 A. Yes, I have.

17 Q. Let's start with this one. What is this data?

18 A. So this is data from Google itself, and it's looking at
19 people who went out and purchased smartphones. And the first
20 thing it does is it says: Well, what were they considering
21 doing? And it's saying that when you look at them, around a
22 third of all users were considering switching between iPhone
23 and Android.

24 Q. Professor, there's a similar percentage for the iOS
25 users on the right side, 35 percent, but what's the second row?

1 **A.** Oh, so the second row is then saying who actually
2 switched, and what you should take from that data is that
3 though about the same percent were thinking of switching, in
4 the end Android has this problem that more people ended up
5 switching to iPhone. That's what we call asymmetry, and
6 that's something which suggests that Google's put under a lot
7 of competitive pressure because it's losing more users in this
8 competitive battle.

9 **Q.** Professor, have you seen any other data or research on
10 switching?

11 **A.** Yes, I have.

12 **Q.** And what is this demonstrative?

13 **A.** So this is from a company named Kantar. And I know it's
14 late in the day, so just briefly, what's really important about
15 it is that if you look at that column Android to iOS, it says
16 not only is Android losing more users than iOS, but it's also
17 losing the most valuable users.

18 And by "valuable," I mean people who are buying expensive
19 smartphones and they're, therefore, likely to be in an income
20 bracket where they're spending a lot of money on apps. So it's
21 telling you not only is Android losing users to iOS, but it's
22 losing the users it really doesn't want to be losing.

23 **Q.** Professor, have any large developers looked at this
24 switching issue?

25 **A.** Yes, they have.

1 Q. And please explain to the jury what you're seeing here
2 with this slide.

3 A. Yes. So this was really interesting data because it came
4 from Meta. That's the company which makes Facebook and
5 Instagram. And what Meta can actually do is because you're
6 using an app, they can really measure people and they can say,
7 "Okay. This person was using Android to access Facebook.
8 Let's see if they keep on using Android." It's a very
9 detailed, granular way of thinking about switching.

10 And what you can see from this is we look at after one
11 year, from 2019 to 2020, 14 percent of people have stopped
12 using Android to access Facebook. And then if we look over a
13 four-year period, it's really quite bad. It's 34 percent of
14 people have just stopped using Android.

15 Q. And, Professor, as an economist, is this level of
16 switching meaningful?

17 A. Yes. I mean, losing this much of your user base, this is
18 really meaningful.

19 Q. Now, thus far we've been focusing a lot on Google and
20 Apple.

21 Beyond competition with Apple, does Google Play compete
22 against other meaningful alternatives?

23 A. Yes, it does.

24 Q. At a high level, can you briefly describe those
25 alternatives?

1 **A.** Let me -- maybe if I use an example. So if we were to
2 think about something, say, like Disney Plus, I could buy my
3 Disney Plus subscription on my PC, I could buy it on my
4 Smart TV as I ended up doing. There's lots of different places
5 I could buy that Disney Plus subscription, and this also is a
6 real reasonable substitute for people who are looking to buy,
7 say, a Disney Plus subscription.

8 **Q.** Let's move from Disney Plus and talk about Fortnite.

9 Have you evaluated the different ways that Epic Games have
10 transactions with Fortnite users?

11 **A.** Yes, I have.

12 **Q.** So, Professor, let's focus on Fortnite players who use
13 their Android devices to play the game.

14 Have you looked at the data to see how those users on
15 Android are doing transactions with Epic?

16 **A.** Yes, I have.

17 **Q.** Okay. Is that what this slide shows?

18 **A.** Yes. It's showing four months of data, millions of
19 transactions where I'm looking at what happened in those
20 four months when Fortnite was available on the Play Store.

21 **Q.** And what did happen?

22 **A.** Well, what you can see is that when we look at people who
23 opened up Fortnite on their Android phones, we see that out of
24 their spending, only 13.9 percent of it was actually spent on
25 Android.

1 Q. Why does this matter from a market-definition perspective?

2 A. Well, it matters because, remember, we're thinking about
3 reasonable alternatives. And what I can see here is that these
4 Android players, you know, who were using Android -- Fortnite
5 on their Android phones, actually had lots of other
6 alternatives for how they could spend their money on Fortnite
7 and that actually Android was just a very small proportion
8 really of what they were spending their money on.

9 Q. So, Professor, does that mean that Epic can use Android
10 app stores to distribute Fortnite to consumers, collect money
11 from those consumers in lots of different ways, and never pay
12 anything to Google?

13 A. That's right.

14 Q. Now, yesterday Dr. Bernheim testified you cannot play
15 Fortnite on a console while riding in a bus. Do you remember
16 that testimony?

17 A. Yes, I do.

18 Q. What was your reaction to that?

19 A. Well, my reaction to that is that if you've ever played
20 Fortnite, you know that you can buy your V-Bucks anywhere and
21 then use them on the bus. You don't have to buy the V-Bucks on
22 the bus as Dr. Bernheim seemed to think. The way the in-game
23 currency works is you can buy it anywhere and then potentially
24 use it on your Android phone on that bus.

25 Q. Professor, would the competitors who are covered in the

1 green bar, the 13.9 percent, prefer that that bar be
2 100 percent?

3 **A.** They would absolutely love it, yes. I mean, obviously any
4 one of these bars they would love to be 100 percent here, but
5 they're not.

6 **Q.** And they're not because are they losing those sales to the
7 other alternatives to -- for Epic to transact with gamers?

8 **A.** Yes. I mean, they're losing these sales. They'd love it
9 to be 100 percent, but instead it's not and people are spending
10 money elsewhere.

11 **Q.** Now, this morning Professor Tadelis testified that
12 Google Play is the only game in town when it comes to billing.
13 Do you remember him testifying to that?

14 **A.** Yes.

15 **Q.** What does this data say about that opinion of Dr. Tadelis?

16 **A.** Well, you know, I think it really brings into question I
17 think what Dr. Tadelis called this coercive tie, if you
18 remember. I mean, we don't see that here. Instead what we see
19 is Android users being able to play in-game currency in lots of
20 different places.

21 **Q.** Professor, does this analysis differ, by the way, if you
22 look at data outside of the United States?

23 **A.** No, it doesn't. I think it goes down a fraction --
24 13.6 percent, something like that. Android is pretty much the
25 same.

1 Q. On the left side of this data, it shows iOS at
2 6.5 percent. What is going on with that?

3 A. Well, again, this is something which doesn't -- wouldn't
4 really be possible in Dr. Bernheim's world in that what we're
5 seeing there is that people who've opened up Fortnite on
6 Android are still spending money on iOS. Android is not
7 getting all that money.

8 Q. By the way, which competitors are covered in that gray bar
9 under -- above iOS?

10 A. Well, as we've heard a few times, on iOS is only one app
11 store. So that would be the Apple App Store.

12 Q. In the green bar, what competitors are covered?

13 A. So you notice I call that Android, and that's because it's
14 both Google Play and the other app stores on Android.

15 Q. Let's talk about one of those other app stores just
16 briefly, though.

17 First of all, how widespread are alternative app stores on
18 Android devices?

19 A. Well, I think we heard that very well from Dr. Gentzkow,
20 and I seem to recall him saying something like 67, 68 percent
21 of all phones have one of these app stores preinstalled.

22 Q. We won't go through all of that again.

23 Does the existence of an alternative like the Samsung
24 Galaxy Store matter to a developer like Epic?

25 A. Yes, it does, and I think we heard actually from

1 Dr. Bernheim that Epic has put Fortnite on the Samsung
2 Galaxy Store.

3 Q. Now, beyond the Samsung Galaxy Store, have you heard of --
4 you've heard of web browsers; right?

5 A. Yes, I have.

6 Q. Have you heard of the web browser fortnite.com/android?

7 A. Yes, I have.

8 Q. What is the significance of fortnite.com/android?

9 A. Well, again it comes to these alternatives, and what's
10 important about it is that every phone has a mobile browser and
11 that you can use that mobile browser to go and visit
12 fortnite.com/android and buy in-game currency.

13 Q. Have you seen any evidence as to whether American
14 consumers actually know how to use web browsers?

15 A. Yes. It won't surprise you to learn that American
16 consumers can use browsers; and, indeed, when I've looked at
17 the data about how these browsers are being used, unlike what
18 is suggested yesterday by Dr. Bernheim, what you see is people
19 really switching between, say, browsers and an app, you know,
20 especially for certain categories of apps, like news and social
21 media.

22 Q. Now, is there any evidence that you've seen that Google
23 considers all of these different alternatives -- the Samsung
24 Galaxy Store, web browsers -- as potential competitors?

25 A. Yes.

1 Q. We'll move on to get things going.

2 Let's talk briefly about a part of Dr. Bernheim's
3 testimony called the SSNIP test.

4 A. Oh, of course.

5 Q. Do you recall that testimony?

6 A. Yes, I do.

7 Q. I think he also referred to the hypothetical monopolist
8 test.

9 A. Yes, that's right.

10 Q. Do you have any criticism of the use of a SSNIP test as
11 Dr. Bernheim described it during his testimony?

12 A. Yes, I do.

13 Q. Can you just briefly describe your assessment of that part
14 of his opinion?

15 A. Yes, of course, and it helps explain why I didn't think
16 that a SSNIP test was appropriate to do here. So you heard
17 from Dr. Bernheim that the SSNIP test is a technical thing that
18 economists can but don't always use when thinking about market
19 definition, but the issue comes from what the product is here
20 in using a SSNIP test.

21 Do you remember that Dr. Bernheim said there's a joint
22 need; app developers, app users? But then when he described
23 his SSNIP test, it was done just from the perspective of an app
24 user and there was no attempt to incorporate any of these
25 feedback loops that we've talked about, which you really need

1 to do when you're thinking about a joint need.

2 So that's my critique of Dr. Bernheim, and also explains
3 why it was that I didn't think that a SSNIP test was something
4 which would be useful illuminating here.

5 **Q.** Professor, a SSNIP test involves a test on price; is that
6 right?

7 **A.** Yes, that's right.

8 **Q.** Are there other elements of competition when it comes to
9 app stores specifically?

10 **A.** Yes. I mean, if you've been hearing all my examples, I've
11 been talking about quality and, you know, that's a really
12 important way that Google Play and Android is competing here.

13 **Q.** Okay. So we've been talking a lot about the product and
14 product market. Can you just remind -- before we go to the
15 second opinion, can you just remind the jury, at the end of all
16 that testimony, what is your opinion with respect to the
17 relevant product market?

18 **A.** So my opinion when it comes to relevant product market is
19 that plaintiff's experts got it wrong; and when you understand
20 that the product is the facilitation of interactions between
21 developers and app users, it becomes clear that Google's
22 competing both against Apple but also all these other means
23 that we saw those Fortnite users where they can actually also
24 be buying in-game currency.

25 **THE COURT:** I'm sorry. I'm having trouble. What is

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1 the relevant product market? So Dr. Bernheim described it,
2 best of my recollection right now, as the in-app distribution
3 of -- the distribution of apps within the Android OS. Okay?

4 What is your -- I don't understand. What is your
5 definition of the relevant product market?

6 **THE WITNESS:** So my relevant product market --

7 **THE COURT:** Talk into the microphone so everybody can
8 hear you.

9 **THE WITNESS:** Oh, sorry.

10 My relevant product market is the facilitation of digital
11 content transactions.

12 **BY MR. ROCCA:**

13 **Q.** Professor, is that a --

14 **THE COURT:** Facilitation? What do you mean by that.

15 **THE WITNESS:** So when I say "facilitation," I mean
16 making sure that these interactions between app developers and
17 app users go well.

18 **BY MR. ROCCA:**

19 **Q.** Professor, before we move on from that topic, is it
20 possible for a relevant product market to cover a service?

21 **A.** Yes, it can.

22 **Q.** And in your opinion, is Google Play providing a service to
23 developers on the one hand and app users on the other hand?

24 **A.** Yes, that's right.

25 **Q.** And what is the service that Google Play is providing?

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1 **A.** So, again, it would be the service is the facilitation of
2 these digital content transactions which cover both paid and
3 nonpaid interactions.

4 **Q.** Now let's turn to the geographic market.

5 What is your opinion with respect to the geographic
6 market?

7 **THE COURT:** I'm sorry. I'm going to have to go back
8 to my question.

9 Okay. What is a digital content transaction?

10 **THE WITNESS:** So a digital content transaction is
11 describing both -- so it's a way of getting the content out of
12 the app, that's the digital content, and then it's getting it
13 in the hands of the app user, and it covers both paid and
14 nonpaid types of transactions.

15 **THE COURT:** Okay.

16 All right. Go ahead.

17 **BY MR. ROCCA:**

18 **Q.** Professor, let's talk about the geographic market.

19 What is your opinion with respect to the geographic
20 market?

21 **A.** So my opinion of the geographic market is that it's the
22 United States.

23 **Q.** And what is geographic market for the purposes of
24 antitrust market definition?

25 **A.** So geographic market is another layer we economists put

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1 onto market definition, is that we don't just think about the
2 product, which we've just been talking about, but we also
3 think: Well, where are the reasonable substitutes
4 geographically for that product?

5 **Q.** Can you please give the jurors an example from everyday
6 life of geographic market?

7 **A.** Yes. We heard one yesterday from Dr. Bernheim. If you
8 remember, he was talking about supermarkets in
9 Southern California, Northern California. They're probably not
10 reasonable substitutes. You're not going to drive to a
11 Northern California one if you live in L.A.

12 **Q.** Professor, your opinion here is that the geographic market
13 is the United States. Why?

14 **A.** Well, it goes back to this idea of reasonable substitutes.
15 And what I did in my analysis was I looked to see, well, are
16 other app stores in other countries really reasonable
17 substitutes for app users looking to have one of these
18 interactions with an app developer.

19 **Q.** Professor, what is this demonstrative that you've prepared
20 for the jury to discuss this point?

21 **A.** So this is actually a screenshot of the Korean One Store,
22 and what I want you to look at -- so the One Store is an app
23 store based out of Korea, and what I want you to do is take a
24 look at it and ask yourself: How easy would it be for the
25 majority of American app users to use this as an alternative,

1 as a reasonable substitute for Google Play?

2 Q. And from this example, what is your conclusion?

3 A. Well, my conclusion is, no. I mean, of course, there's a
4 small number of Americans who speak Korean; but even if you get
5 over the language barrier, to use this, you still have to have
6 an address in Korea, you know, a billing address, and be able
7 to use the currency and have Korean money. It's going to
8 come -- it's going to be very hard to use. It's not a
9 reasonable substitute for using an app store in America.

10 Q. Beyond the Korean One Store, do you have other examples?

11 A. Yes. These are just screenshots from the Apple App Store
12 and the Google Play Store as it appears in Korea. And, again,
13 you'll see there, you know, there may be reasonable
14 alternatives to the One Store; but, again, they're not a
15 reasonable alternative if you're thinking -- if you're based in
16 the U.S. and wanting to interact with an app developer.

17 Q. So the plaintiff's experts just got this one wrong?

18 A. Yes, they did.

19 Q. As an economist, if Epic has not defined the proper
20 geographic market, has it defined an antitrust relevant market?

21 A. No, they haven't.

22 Q. All right. Let's go to your third opinion, which states
23 Google does not have monopoly power.

24 First of all, what is monopoly power?

25 A. Well, we've heard it a bit before, but basically I agree

1 with Dr. Bernheim that it is sustained and substantial market
2 power.

3 **Q.** Is there a difference between monopoly power and market
4 power?

5 **A.** Yes. Again, monopoly power is substantial and sustained
6 market power.

7 **Q.** If Google is trying to compete with Apple, does Google
8 have monopoly power?

9 **A.** No, it doesn't.

10 **Q.** Setting aside monopoly power, if Google is trying to
11 compete with Apple, does Google have enough market power to
12 cause harm to consumers?

13 **A.** No, it doesn't.

14 **Q.** Have you done a comparison of how Google and Apple are
15 doing in their competition?

16 **A.** Yes, I have.

17 **Q.** Let's look at that. What is this demonstrative?

18 **A.** So this is only looking at the Apple App Store and the
19 Google Play Store, but what it's illustrating is if you look at
20 them head to head in terms of the percentage of revenues
21 they're getting, then Google Play Store is lagging behind.
22 It's only getting 36 percent of revenues in the U.S.

23 **Q.** And why is this significant from a perspective of monopoly
24 power?

25 **A.** Again, because what you're asking is whether these

1 reasonable substitutes are, I think in Dr. Bernheim's words,
2 giving -- you know, allowing competitive discipline. And when
3 you see, as we see here, something like the Apple App Store,
4 you know, just doing so much better than Google Play Store,
5 then that is competitive discipline.

6 **Q.** If we look at this data worldwide but excluding China,
7 does -- what happens to the percentages?

8 **A.** They shift a little bit. Google -- the Google Play Store
9 goes up to 43 percent.

10 **Q.** 43 percent. Would that change your opinion?

11 **A.** No, it wouldn't.

12 **Q.** Now, those charts just showed Google and Apple. If Google
13 is competing against other platforms to facilitate transactions
14 between developers and users, how does that impact monopoly
15 power?

16 **A.** So, again, for the same reason if, as we're seeing here,
17 all these reasonable alternatives that Android players are
18 using to buy their in-game currency, then, again, that is
19 competitive discipline which means there's not going to be
20 monopoly power.

21 **Q.** Professor, this chart is limited to Android Fortnite
22 players. Are there other Fortnite players?

23 **A.** Yes, there are.

24 **Q.** Have you looked at the data for all of the Fortnite
25 players beyond just Android?

1 **A.** Yes, I have.

2 **Q.** And what is this chart?

3 **A.** Okay. So this is looking -- you remember the first chart?
4 It was looking at people who'd actually opened up Fortnite on
5 their Android phone.

6 Now, if we look, though, at the universe of all people who
7 play Fortnite, we see that that's just a very small sliver of
8 what's going on. And, indeed, Android is only 1 percent of
9 Epic's revenue from all Fortnite players.

10 **Q.** What is the significance of this data?

11 **A.** Well, again, it is important for thinking about reasonable
12 alternatives and why it is that when you see this sort of small
13 sliver of 1 percent of Android, again thinking: Well, is
14 Google having to compete here?

15 **Q.** And could you conclude from this data that Google Play is
16 a monopolist of anything?

17 **A.** No. It certainly not suggests that.

18 **Q.** Now let's close out monopoly power by talking about the
19 factors that an economist might look to as evidence of a
20 monopolized market. Okay?

21 What are the factors generally that you would consider?

22 **A.** Well, we just heard those from Professor Gentzkow, but
23 what you look for is you look at price, you look at quality,
24 you look at output.

25 **Q.** And we won't rehash. Let's just start with output.

1 What is your conclusion about how output affects your
2 opinion on monopoly power?

3 **A.** However you measure it, output has been exploding.

4 **Q.** And is exploding output what you would expect to see if
5 Google had monopoly power?

6 **A.** No.

7 **Q.** How about innovation? What did you find about innovation?

8 **A.** When you look at innovation, these products have been
9 really improving over time. So what I've observed is, you
10 know, a lot of incremental innovation.

11 **Q.** And is increasing innovation the kind of thing you would
12 find if a market had been monopolized?

13 **A.** No.

14 **Q.** How about price?

15 **A.** Well, we've heard this before, but prices, if anything,
16 have been going down for some app developers.

17 **Q.** Now, is that consistent with what you would find in a
18 monopolized market?

19 **A.** No. In a monopolized market, you expect prices to be
20 going up and up.

21 **Q.** Now, over time, has Google offered more services to users
22 and developers for the same or a lower price?

23 **A.** That's exactly what it means to have lots of incremental
24 quality improvements and prices, if anything, to be going down.

25 **Q.** Now, this is another demonstrative regarding platform fees

1 by platform. We've seen different versions of this.

2 Generally speaking, what does this pricing level show to
3 you as an economist about whether Google has monopoly power?

4 **A.** Well, again, when you look at this, you know, one thing
5 you might expect to see is if a firm had monopoly power, is for
6 its price to somehow be higher than everyone else, but that's
7 not what we see here.

8 **Q.** Is Google's pricing competitive with other fees in the
9 industry?

10 **A.** Yes, it is.

11 **Q.** Do you have an opinion as to whether Google is pricing its
12 services above competitive levels?

13 **A.** I think this diagram makes it very clear they're not.

14 **Q.** Now, the Epic Game Store you see is the last on the row,
15 and it has that one dot by itself?

16 **A.** Yes.

17 **Q.** Do -- does that have any significance to you as an
18 economist that the Epic Game Store is charging, I think,
19 12 percent as shown on this slide?

20 **A.** Well, I mean, I always put it in the context of what
21 Dr. Bernheim acknowledged yesterday, which is the Epic Game
22 Store is losing money. So I think you have to evaluate it in
23 that context.

24 **Q.** Now, to close this out, Professor, is there anything else
25 about Google's business model that you find helpful to

1 considering the issue of monopoly power?

2 **A.** Yes.

3 **Q.** Have you looked at what percentage of apps that Google
4 distributes for free on the store?

5 **A.** I have, yes.

6 **Q.** And we've heard that testimony today already, but I'm
7 putting up a demonstrative. What is this demonstrative?

8 **A.** Okay. This is just to remind us, ourselves, that when you
9 do the calculations and you look at apps, 96 percent of all
10 apps are not subject to Google's service fee. They pay
11 nothing.

12 **Q.** By the way, did you hear the testimony today from
13 Dr. Tadelis about the Amazon Marketplace at the very end of his
14 examination?

15 **A.** Yes.

16 **Q.** Do you know whether the Amazon Marketplace offers
17 96 percent of the transactions on that marketplace completely
18 free of charge?

19 **A.** No, they definitely don't.

20 **Q.** What is the economic rationale for Google to permit
21 developers to use its platform and not get any payment for it?

22 **A.** Well, the reason it wants to give away all this stuff for
23 free is, remember, it's trying to make the Android attractive,
24 competitive with Apple.

25 And I can tell you, consumers love free stuff. People

1 expect free apps, and so Google has this real incentive to try
2 and actually get a lot of free apps out there, allow customers
3 to try out apps, see if they like them, discover the value.
4 And that's what they're trying to do here to make their
5 ecosystem work.

6 **Q.** Is it consistent with a monopoly to give away so much
7 value for free?

8 **A.** It certainly would be very unusual.

9 **Q.** And, finally, would it be common in your experience as an
10 economist for a monopolist to only make money when somebody
11 else makes money?

12 **A.** No. I mean, usually when you're thinking about monopoly
13 you're thinking about the extraction of money from consumers,
14 and instead what we're seeing here is that Google through
15 Android and Google Play are creating that value and only making
16 money once they've created that value.

17 **Q.** And what does that say about whether Google is a
18 monopolist?

19 **A.** Again, it's evidence against.

20 **MR. ROCCA:** I pass the witness.

21 **THE COURT:** Okay. That's it for today.

22 So remember, as we always close each day, put everything
23 out of mind. No research. No thinking. No talking about
24 this.

25 And we'll see you tomorrow morning at 9:00 a.m.

1 **THE CLERK:** All rise.

2 (Proceedings were heard out of the presence of the jury:)

3 **THE COURT:** All right. You can step down. You're
4 still under oath. No communications with anyone about the
5 content or presentation of testimony.

6 Okay. So what's happening?

7 You can go.

8 **MR. POMERANTZ:** Your Honor, I think when
9 Professor Tucker is finished, it then turns to our case. We
10 will be playing the two deposition excerpts from Activision and
11 Riot, which the jury's heard a lot about; and then we will turn
12 to our -- the first live witness of our case, which is
13 Rich Miner. You heard about him in my opening. And then we'll
14 move on to our other witnesses, and we feel like we are in a
15 position to get this done by Friday.

16 **THE COURT:** Good.

17 **MR. BORNSTEIN:** All we have, Your Honor, is, I'm a
18 broken record, a hope for the opportunity for rebuttal whether
19 it be at the conclusion of the week or if it needs to flop over
20 or sooner even. We can do it back to back.

21 **THE COURT:** How much time would you like to ask for?

22 **MR. BORNSTEIN:** I would request a total of 45 minutes,
23 Your Honor.

24 **THE COURT:** Well, let's just do it tomorrow and get it
25 over with. All right?

1 **MR. BORNSTEIN:** Sure.

2 **MR. POMERANTZ:** Your Honor, we have had discussions
3 about this rebuttal, and I did agree with Mr. Bornstein that --

4 **THE COURT:** I was told you all agreed.

5 **MR. POMERANTZ:** No, we did. We did. But the
6 agreement was it would come at the end of our case, and that's
7 what we would ask for, is that if they want the 45 minutes and
8 Your Honor is okay with it, that it just come on Friday after
9 we're done with our case so that we can put on our case next.
10 That was our agreement.

11 **MR. BORNSTEIN:** That is what Mr. Pomerantz and I
12 discussed, but I'm -- however Your Honor wants to do it is
13 obviously what we'll do.

14 **THE COURT:** Yes. Okay. That's fine. Are you sure
15 you want to do that?

16 **MR. POMERANTZ:** Yes, Your Honor.

17 **THE COURT:** All right. Okay. We'll do it that way.
18 All right?

19 **MR. BORNSTEIN:** Thank you, Your Honor.

20 **THE COURT:** Okay. That's great.

21 So we're going to have to start doing the jury
22 instructions soon. You'll be closing on Monday the 11th.
23 Okay? And we'll start talking tomorrow about the jury
24 instructions.

25 I do need a revised verdict form too. So get that to me

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1 tomorrow. All right? I'm going to have very limited
2 availability next week. So get everything to me tomorrow, the
3 revised verdict form. Okay?

4 **MR. BORNSTEIN:** Yes, Your Honor.

5 **THE COURT:** Now, where are you on -- okay.

6 We've seen a lot now. Judgment day is coming. Where are
7 you on settlement discussions?

8 **MR. BORNSTEIN:** We're not, Your Honor.

9 **THE COURT:** How can that be? How would you not be
10 dual tracking this to try to reach an amicable agreement?

11 **MR. BORNSTEIN:** I can have a conversation with my
12 client, Your Honor, but we have not had discussions.

13 **THE COURT:** Okay. You need to and you need to do that
14 next week. All right?

15 **MR. BORNSTEIN:** I will, Your Honor.

16 **THE COURT:** Consider that a Court order. All right?

17 **MR. BORNSTEIN:** Understood.

18 **THE COURT:** Now, we've talked about this before, but
19 what are you -- assuming you win -- I don't know, so don't
20 panic on the defense side. I have no idea what the jury is
21 going to do. I have no idea about posttrial proceedings. If
22 you win, what are you planning to ask for?

23 **MR. BORNSTEIN:** So, Your Honor, as we talked about a
24 little bit last time, the way we view it is there are three
25 main points. One is to have the opportunity for Epic and for

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1 other developers to have their own store without the various
2 restrictions and obstructions that have been the subject of
3 testimony.

4 **THE COURT:** All right. So they'll be freed from the
5 antisteering requirement. Is that what you're talking about?

6 **MR. BORNSTEIN:** Well, that's not what I'm talking
7 about right now, Your Honor. The issue I'm talking about are
8 the downloading frictions that are disproportionate as you
9 heard Professor Mickens testify.

10 **THE COURT:** Okay. Eliminate the downloading
11 frictions. They can operate an independent store. They won't
12 be subject to antisteering requirements.

13 Okay. What else?

14 **MR. BORNSTEIN:** Correct. And then there would be
15 freedom of payment options. So what we're worried about,
16 Your Honor, is you've heard testimony about User Choice Billing
17 choice and the way it operates.

18 **THE COURT:** When you say "freedom," do you mean
19 Google Play plus an alternative, like apparently is offered, or
20 you never mentioned Google Pay?

21 **MR. BORNSTEIN:** Well, the real issue, Your Honor, is
22 at least to have the option to have an alternative.

23 **THE COURT:** Okay. That's already happening in some
24 instances; right?

25 **MR. BORNSTEIN:** And to have -- well, it's a pilot

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1 program.

2 But the other issue and it's not available --

3 **THE COURT:** User Choice Program. So that already
4 exists. So you would like to be part of that program?

5 **MR. BORNSTEIN:** No, Your Honor. I'll be very clear.
6 First of all, it's a pilot program that's currently not
7 available for games and all of that.

8 But my problem with the program is the way the fees are
9 structured, as you heard in the testimony, creates no benefit
10 for those who choose to use an alternative platform because
11 they continue to be charged the 26 percent fee on top of
12 whatever it is that they need to pay for the process.

13 **THE COURT:** You understand no matter what happens, I
14 and no federal judge is going to micromanage Google's business.
15 You know that.

16 **MR. BORNSTEIN:** I do understand that.

17 **THE COURT:** I am not going to set a fee for Google.
18 It's not going to happen. So if you're worried about
19 26 percent, you've come to the wrong place because I can't help
20 you with that.

21 **MR. BORNSTEIN:** I completely understand that,
22 Your Honor. My full expectation is the expectation that the
23 antitrust laws are founded on; that if we remove the
24 obstructions to competition, Google will set a competitive fee.

25 **THE COURT:** You need to tell me -- you should know by

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1 now what are you going to ask for. So you're going to ask for
2 what? You want total freedom for your own billing system? Is
3 that what you're going to ask for?

4 **MR. BORNSTEIN:** That's correct, Your Honor.

5 **THE COURT:** And what else?

6 **MR. BORNSTEIN:** The freedom on stores, as I said, and
7 freedom on billing system; and the third pillar, the way we
8 have been talking about, is anticircumvention; just to ensure
9 that Google can't reintroduce the same problems through some
10 alternative creative solution, a standard kind of fence.

11 **THE COURT:** Anticipatory injunctions are not going to
12 happen. We don't do "Don't break the law injunctions." We
13 don't do that. So if you have a problem, you can come back,
14 but I can't -- I'm not going to write a menu of hypothetical
15 options that may or may not happen.

16 **MR. BORNSTEIN:** I understand that, Your Honor. We
17 would be --

18 **THE COURT:** It sounds to me this is solvable. Okay?
19 I haven't heard a word you said that is so unpalatable to
20 Google from the evidence I've seen that you-all can't be
21 talking.

22 This seems like something you ought to be able to do a
23 deal on. They've done deals with Spotify. Spotify pays
24 4 percent or 0 percent, has its own billing.

25 Okay, look, you're not going to get everything you want,

1 and you need to be clear with your client about that who's
2 sitting right behind you, that that's what's going to happen.
3 Okay?

4 So why don't you take that and do something with it. This
5 is a solvable business issue if you make it one. You have to
6 make it a solvable business issue. I don't want to hear "We're
7 not going to talk." That's an inappropriate response. Okay?

8 So you're ordered to talk, and you do it substantively.
9 Now, who do you want to have on your client side talking with
10 Mr. Bornstein's client?

11 **MR. POMERANTZ:** I think we've had --

12 **THE COURT:** I want to know the name. Just tell me.
13 I'm past the point where I want this to happen without my
14 supervision.

15 **MR. POMERANTZ:** Assuming he's available, Your Honor,
16 Don Harrison, who you've met. He has led other discussions
17 with Epic.

18 **MR. BORNSTEIN:** Your Honor, we did have a meeting at
19 the Court's order here in town.

20 **THE COURT:** Now, why is he the right person?

21 **MR. POMERANTZ:** He's in charge of the partnership
22 agreements of this type.

23 **THE COURT:** He would be able to strike a deal?

24 **MR. POMERANTZ:** He would have the authority to strike
25 the deal.

1 **THE COURT:** And who are you going to have on your
2 side?

3 **MR. BORNSTEIN:** Mr. Sweeney.

4 **THE COURT:** All right. You make that happen next
5 week. All right? In-person meeting. You both are going to be
6 in town. I want that to happen with this discussion in mind.
7 Okay?

8 Now, if you can't do it, you can't do it, that's fine, but
9 you are going to try. That is a requirement. You must try.

10 **MR. BORNSTEIN:** Understood, Your Honor. We tried
11 once. We will try again.

12 **THE COURT:** Remember being 7 years old you had
13 broccoli, you had to take a bite. You have to do that here.
14 All right? You don't have to finish the whole plate, but you
15 are going to do it.

16 And you're both going to tell me, not the substance, I'm
17 not involved in that, but you're going to tell me some of the
18 mechanics about what's going on, how long you met, did you make
19 any progress, you know, things along those lines. All right?

20 Okay. All right. We're good for tomorrow?

21 **MR. BORNSTEIN:** I have one question, Your Honor.

22 **THE COURT:** One question, yes.

23 **MR. BORNSTEIN:** How long would Your Honor anticipate
24 giving us for closings in the event we don't reach a
25 resolution?

1 **THE COURT:** Didn't I already -- I thought I already
2 set that. Let me just check my order.

3 **THE CLERK:** You did. It's in the pretrial order.

4 **THE COURT:** Didn't I give you an hour or something?

5 **MR. BORNSTEIN:** I apologize, Your Honor. Obviously if
6 it's in there, I have forgotten.

7 **MR. POMERANTZ:** I did too because we discussed it this
8 morning, and neither one of us remembered.

9 **THE COURT:** Let me just check. I believe I gave
10 you --

11 **THE CLERK:** One hour.

12 **THE COURT:** -- one hour.

13 **MR. POMERANTZ:** And, Your Honor, I understand that
14 Epic will have that one hour, they can split it however they
15 want between their closing and the rebuttal.

16 **THE COURT:** Yes.

17 **MR. BORNSTEIN:** You mean a rebuttal closing, not the
18 rebuttal testimony from our experts?

19 **MR. POMERANTZ:** Correct.

20 **MR. BORNSTEIN:** Okay.

21 **THE COURT:** Yeah. No, if you want to reserve time,
22 that's perfectly fine.

23 **MR. BORNSTEIN:** Yes.

24 **THE COURT:** But you get an hour total.

25 Where is that, Ms. Clark?

1 **THE CLERK:** It's on page 4, Section 5.

2 **THE COURT:** Page 4 of Docket 700?

3 **THE CLERK:** Docket 491.

4 **THE COURT:** Okay. There it is. Up to one hour for
5 closing.

6 Yeah, okay. That should be more than enough.

7 All right. So you're going to finish with this witness in
8 the morning?

9 **MR. BORNSTEIN:** Correct.

10 **THE COURT:** Okay.

11 **MR. BORNSTEIN:** And then we'll hand it over to Google.

12 **THE COURT:** You're going to finish with this witness
13 in the morning, and then you're going to do your thing. Okay.
14 Good.

15 All right.

16 **MS. CHIU:** Your Honor, just very quickly, if we may,
17 we have a third party whose deposition Google intends to play
18 tomorrow, and they have a sealing request. Google has no
19 position on it, but I understand their counsel is here to
20 address Your Honor on it.

21 **THE COURT:** Google has no position on it. Okay.

22 Oh, is this -- who is this?

23 **MS. CHIU:** This is Riot Games, Your Honor.

24 **THE COURT:** Okay. All right. Yes.

25 **MR. BORNSTEIN:** Just for the record, Your Honor, Epic

1 has no position on this either.

2 **THE COURT:** Great. Okay.

3 **THE CLERK:** Counsel please state your name.

4 **MS. AMINIRAD:** Shannon Aminirad.

5 **THE COURT:** I have a 4:00 conference call so we're
6 going to have to be quick.

7 Okay. Go ahead.

8 **MS. AMINIRAD:** Shannon Aminirad, counsel for
9 Riot Games.

10 Your Honor, Riot Games filed an application to seal --

11 **THE COURT:** Can you hand it to me?

12 **MS. AMINIRAD:** Yes. I have copies. May I approach?

13 **THE COURT:** Yes.

14 All right. Let's just get to the punchline. Which
15 document is it?

16 **MS. AMINIRAD:** There are five exhibits. They're all
17 internal documents, and they specifically discuss Riot's
18 negotiating strategy, and Riot is in the middle of negotiations
19 with the platform right now.

20 **THE COURT:** I'm going to make life easy. I'm going to
21 do the same thing I did for Spotify. All right? You have that
22 order. It's on the transcript.

23 Any internal, purely internal, no. Anything else, yes, it
24 will come in. Okay? So fees, whatever, that comes in.

25 Anything purely internal to Riot, you know, will not come in.

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1 Look at the Spotify order. That will give you the
2 paradigm. That should do it; right?

3 **MS. AMINIRAD:** Yes. Thank you, Your Honor.

4 **THE COURT:** Okay. Thanks very much. I'll see you in
5 the morning.

6 **THE CLERK:** All rise. Court is in recess.

7 (Proceedings adjourned at 3:51 p.m.)

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9
10 **CERTIFICATE OF REPORTER**

11 I certify that the foregoing is a correct transcript
12 from the record of proceedings in the above-entitled matter.

13
14 DATE: Tuesday, November 28, 2023

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19 Kelly Shainline, CSR No. 13476, RPR, CRR
20 U.S. Court Reporter
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